THE UNIVERSITY OF SYDNEY

General practice activity in Australia

2010–11

Family Medicine Research Centre

Helena Britt, Graeme C Miller, Janice Charles, Joan Henderson, Clare Bayram, Lisa Valenti, Christopher Harrison, Ying Pan, Julie O'Halloran, Carmen Zhang, Salma Fahridin

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BEACH
Bettering the Evaluation and Care of Health

Helena Britt, Graeme C Miller, Janice Charles, Joan Henderson, Clare Bayram, Lisa Valenti, Christopher Harrison, Ying Pan, Julie O'Halloran, Carmen Zhang, Salma Fahridin

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Any enquiries about or comments on this publication should be directed to:

The Family Medicine Research Centre
Sydney School of Public Health, University of Sydney
Level 7, 16–18 Wentworth Street, Parramatta NSW 2150
Phone: +61 2 9845 8151; Fax: +61 2 9845 8155
Email: gpstats@fmrc.org.au

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Foreword

It is a truth universally acknowledged that general practice, subsidised at the point of delivery through Medicare, is at the epicentre of Australian healthcare. General practitioners manage most peoples' immediate health concerns or refer patients to specialist or hospital care when deemed necessary.

The magnitude of this primary care service is reflected in the singular statistic that from April 2010 to March 2011, Medicare paid rebates for about 118.1 million general practice services amounting to an average of 5.3 GP visits per head of population

Undoubtedly, the question that most occupies users of this service is its quality and safety. International comparative surveys of general practice reveal that Australia consistently falls in the upper echelon of participating first world nations; but rigorous studies of its safety are sparse.

Be that as it may, the overriding concern of most public health practitioners and funders of the service is what actually transpires in these numerous primary care consultations. The answer to this question is provided by a unique program—the BEACH—Bettering the Evaluation and Care of Health – program conducted by the Family Medicine Research Centre, of the University of Sydney.

Since 1998 the BEACH program has conducted an ongoing national, cross-sectional study of Australian general practice. Every year about 1000 randomly selected general practitioners record details of 100 consecutive patient encounters on a structured questionnaire. Through this activity BEACH has accumulated and published a comprehensive and sequential record of general practice activities. The most recent significant movement in medicine is evidence-based practice and this requires accurate and relevant data. No one could deny that the BEACH program is a jewel in the crown of evidence-based medicine for general practice—other clinical disciplines do not have such a valuable asset.

The latest addition in this series is Number 29: *General practice activity in Australia 2010–11*, which compiles, an array of data on: general practitioners, practice encounters, the patients, the clinical problems, management actions including medications and other interventions such as preventive counselling, referrals to hospitals and admissions, referrals to specialists and allied health professionals, tests and investigations, practice nurse activity and patient risk factors. Accompanying this publication is the 30th book in the General Practice Series *A decade of Australian general practice activity 2001–02 to 2010 –11*, which highlights the many changes that have occurred over the decade in GP clinical activity.

All outcomes in *General practice activity in Australia 2010–11* are succinctly outlined, accessible and prove to be interesting reading. Importantly, this report also suggests how BEACH data may be integrated and aligned with other national data such as from the Pharmaceuticals Benefits Scheme, pathology and imaging MBS data and the National Health Survey.

However, in these times of evidence-based medicine, one thing that might frustrate attuned readers is that the availability of such a volume of data, necessary as it is, may well hinder attempts to draw meta-analyses effectively signposting possible future directions in primary healthcare delivery.

Crucially, neither here nor from other sources, is there systematic or extensive analysis of what is appropriate in general practice, or identification of the leading health care cost centres. Answers to these questions are becoming more relevant as health expenditure swallows increasing proportions of the national gross domestic product. Perhaps the BEACH team might consider how these indices could be serially evaluated in future reports.

Another future direction would be to focus on the activities of recent players in general practice, such as the autonomous nurse practitioner clinics. These are simply suggestions for consideration of future lines of enquiry.

With these issues in mind, the Family Medicine Research Centre is actively planning the development of a longitudinal general practice patient cohort study to complement the current BEACH data collection. This program will provide data from a stratified random sample of patients, which is collected via GP desktop computer systems. This program will allow the tracking of patient outcomes over time and will enhance the capacity of the BEACH team to comprehensively describe the management of patients in both primary and secondary care.

In the meantime, it must be categorically stated that this assiduous and painstaking assembling of the BEACH data is a credit to Australian medicine, providing the definitive snapshot of activities of general practice in Australia.

Martin B Van Der Weyden MD

Emeritus Editor

Medical Journal of Australia

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The BEACH program 2010–11 was conducted by the Family Medicine Research Centre, University of Sydney in collaboration with the Australian Institute of Health and Welfare (AIHW), under the *AIHW Act*.

The Family Medicine Research Centre thanks the 958 general practitioners who participated in BEACH between April 2010 and March 2011. This report would not have been possible without their valued cooperation and effort in providing the data.

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Summary

This report describes clinical activity at, or associated with, general practitioner (GP) encounters, from April 2010 to March 2011, inclusive. It summarises results from the 13th year of the Bettering the Evaluation and Care of Health (BEACH) program, using a sample of 95,800 patient encounters with 958 randomly selected GPs. After post-stratification weighting, 95,839 encounters were analysed in this report.

BEACH is a continuous cross-sectional national study that began in April 1998. Every year each of about 1,000 randomly selected GPs records details of 100 consecutive encounters on structured paper recording forms, and provides information about themselves and their practice. BEACH is the only continuous randomised study of general practice activity in the world, and the only national program that provides direct linkage of management (such as prescriptions, referrals, investigations) to the problem under management.

The BEACH database now includes information for almost 1.3 million encounters from 12,831 participants representing about 8,700 individual GPs. Smaller studies are done with subsamples of the BEACH encounters. Results for patient body mass index, smoking status and alcohol consumption are reported and abstracts (with the research tools) for other substudies (from 2010–11) are provided.

The companion report highlighting major change over the most recent 10 years of BEACH, *A decade of Australian general practice activity 2001–02 to 2010–11*,[1] is available at <purl.library.usyd.edu.au/sup/9781920899875>.

The general practitioners

Of the 958 GP participants in 2010–11:

- 62% were male, and 42% were aged 55 years and over
- 69% had graduated in Australia and 27% conducted some consultations in a language other than English
- 69% practised in 'Major cities' (classified using the Australian Standard Geographical Classification)
- 26% bulk-billed Medicare for all patients and 73% for selected patients
- 56% had provided care in a residential aged care facility in the previous month
- 61% worked in a practice comprising fewer than five full-time equivalent GPs
- 81% of the GPs worked in a practice that employed practice nursing staff
- more than half (58%) had a co-located pathology laboratory or collection centre
- 43% were in a practice that provided their own or cooperative after-hours care, and 52% in a practice that used a deputising service (multiple response allowed)
- 62% worked in a practice teaching undergraduates, junior doctors or registrars.

GPs spent an average 38 hours per week on direct patient care services.

There were no significant differences in the characteristics of the final sample of BEACH participants and all GPs in the sample frame in terms of sex, age, place of graduation, state, or location by the Australian Standard Geographical Classification.

Participating GPs were slightly less 'busy' than non-participants, rendering an average 5.5 fewer GP service items per week claimed under Medicare than their counterparts.

The encounters

After weighting the data for GP activity and the age-sex of the GP participants, the age-sex distribution of patients at BEACH encounters had an excellent fit (precision ratios 0.91–1.06), with patients at all GP services claimed under the Medicare Benefits Schedule (MBS).

- Direct encounters (patient seen) accounted for 99% of encounters, of which 97% were claimable through MBS or Department of Veterans' Affairs (DVA).
- Surgery consultations accounted for 93% of all MBS/DVA-claimable GP encounters, standard consultations being most common (83% of these). Home, institution and residential aged care visits were few (3%). About 1% were claimable as mental health care items, and 1% as chronic disease items.

In a subsample of 32,257 BEACH encounters containing start and finish times for MBS/DVA-claimable encounters, mean consultation length was 15.0 minutes.

Who were the patients?

- In line with earlier years, females accounted for 57% of encounters.
- Children (aged < 15 years) accounted for 12% of encounters; 15–24 years 9%; 25–44 years 23%, 45–64 years 28%; 65–74 13%; and 75 years and over 16%.
- The patient was new to the practice (not seen before) at only 7% of encounters and at 45% of encounters the patient held a Commonwealth concession card
- Indigenous people (self identified) accounted for 1.2% of encounters and at 11% the patient was from a non-English-speaking background.
- For every 100 encounters, patients gave 156 reasons for encounter (RFEs): 67 described as symptoms/complaints; 31 as diagnoses/diseases; and 58 as requests for a service. The most common RFEs were requests for a check-up, prescriptions, and test results.

What problems do GPs manage at patient encounters?

Problems were managed at a rate of 153 per 100 encounters (n = 146,141).

- The most common were classified as respiratory problems (20 per 100 encounters); problems of a general and unspecified nature (19); skin problems (17); cardiovascular (17); and musculoskeletal problems (17 per 100 encounters).
- Individual problems managed often were hypertension (8.7 per 100 encounters), check-ups (6.4), immunisation/vaccination (5.5), upper respiratory tract infection (URTI) (5.4), and depression (4.2 per 100 encounters).
- On average GPs managed 59 new problems per 100 encounters, the most common being URTI, immunisation/vaccination, and acute bronchitis.
- At least one chronic problem was managed at 41% of encounters and 53 chronic problems were managed per 100 encounters.

An example of the relationship between a problem managed and other data fields is provided for GP management of Type 2 diabetes in 2010–11 in Section 7.8.

What management actions were recorded for problems managed?

For an 'average' 100 problems managed, GPs recorded: 69 medications (81% prescribed); 23 clinical treatments; 11 procedures; 6 specialist referrals; 3 referrals to allied health services; and ordered 30 pathology tests/batteries and 6 imaging tests.

Medications

There were 100,817 medications, 105 per 100 encounters or 69 per 100 problems managed: 81% prescribed, 10% supplied by the GP and 9% recommended for OTC purchase.

When these results are extrapolated to the 118.1 million general practice Medicare-claimed encounters (April 2010 – March 2011), GPs in Australia: prescribed medications 100.5 million times; supplied 12.2 million medications directly to the patient; and recommended medications for OTC purchase 11.6 million times.

- No prescription was given for 55% of problems managed: one for 36%, two for 6%, and more than two for 2%. Prescription rates increased with patient age.
- Medications most often prescribed were: the antibiotics amoxycillin (4% of all prescriptions), cephalexin (3%) and amoxycillin with potassium clavulanate (2%); the analgesics paracetamol (3%) and paracetamol/codeine (2%); and the lipid modifying agent atorvastatin (2%), and the opioid oxycodone (2%).
- Medications were GP-supplied at a rate of 7 per 100 problems managed and vaccines accounted for two-thirds of these.
- Medications were advised for OTC purchase at a rate of 6 per 100 problems managed; paracetamol accounted for 27% of these.

The pattern of GP prescription or supply of statins (to whom and for what) is presented as an example of pharmaco-epidemiological analysis of BEACH data in Section 9.5.

Other treatments

At least one other treatment was provided at 40% of encounters and 50,235 other treatments were recorded, 68% being clinical treatments.

Clinical treatments: 34,019 clinical treatments were recorded, 36 per 100 encounters, or 23 per 100 problems. General advice and education (17% of clinical treatments), and counselling about the problem being managed (15%) were most common. Common preventive counselling/advice about: nutrition and weight; exercise; smoking; lifestyle; prevention; and alcohol was also frequently provided by GPs (together at a rate of 7.5 per 100 encounters).

Of all problems for which clinical treatments were provided, the top 10 accounted for 30%. The most common were depression (5.6% of problems with clinical treatments), URTI (5.2%), hypertension (3.4%) and diabetes (3.4%).

Procedural treatments: 16,216 procedural treatments were recorded, 17 per 100 encounters, or 11 per 100 problems. The most common were: excisions (2.9 per 100 encounters), dressings (2.6 per 100), local injections (2.4) and rehabilitation (1.2).

Referrals and admissions

There were a total of 13,526 referrals, 14 per 100 encounters or 9 per 100 problems. The most frequent were to medical specialists (9 per 100 encounters, 6 per 100 problems managed), followed by referrals to allied health services (4 per 100 encounters, 3 per 100 problems). Very few patients were referred to hospitals or emergency departments (0.7 per 100 encounters, 0.4 per 100 problems).

Referrals to specialists were most often to surgeons (10% of specialist referrals), orthopaedic surgeons (8%) ophthalmologists (8%) and dermatologists (8%). Malignant skin neoplasms, pregnancy, diabetes and osteoarthritis were the problems most often referred to specialists.

Referrals to allied health services were most often to physiotherapists (27% of allied health referrals), psychologists (21%), podiatrists (10%) and dentists (9%). Problems most likely to be referred to allied health services were depression, diabetes and back complaints.

Tests and investigations

Pathology tests ordered: GPs recorded 43,313 orders for pathology tests/batteries, at a rate of 45 per 100 encounters (30 per 100 problems managed). At least one pathology test was recorded at 18% of encounters (for 13% of problems managed).

- Chemistry tests accounted for 58% of pathology test orders, the most common being: lipid tests (2.6 per 100 problems managed); electrolytes, urea and creatinine (2.2); liver function (1.9); and thyroid function tests (1.7 per 100).
- Haematology tests accounted for 18% of pathology and included full blood count, the most frequently ordered individual test (15% of all pathology), ordered at a rate of 4.1 per 100 problems managed).
- Microbiology accounted for 14% of pathology orders. Urine microscopy, culture and sensitivity was the most frequent test ordered within the group.
- Almost 40% of all pathology tests were generated by orders for ten problems, led by diabetes, hypertension, general check-ups, and lipid disorders.

Imaging ordered: There were 9,370 imaging test orders recorded, 10 per 100 encounters and 6 per 100 problems managed. At least one imaging test was ordered at 8% of encounters (for 6% of problems managed). Diagnostic radiology accounted for 47%, ultrasound 39%, and computerised tomography for 11% of all imaging orders.

An example of the relationship of tests and other data elements is provided for lipid tests in Section 12.5.

Practice nurse activity

- Practice nurses were involved in 8% of encounters and 5% of problems managed. A practice nurse Medicare item number was recorded for 40% of those encounters involving a practice nurse, the most common claims being for immunisation (67%) and wound treatment (28%).
- The majority of their activities were procedural (92%), and these procedures represented 38% of all procedures recorded. Clinical treatments accounted for 8% of practice nurse activity, but only 2% of all recorded clinical treatments.
- The most common procedures done by nurses were injections (40% of recorded procedures), dressings (19%), incisions (6%), check-ups (7%) and INR tests (7%).

Patient risk factors

Overweight and obesity in adults (18 years and over): Of 31,315 adults, 62% were overweight or obese: 35% being overweight and 27% obese.

Overweight and obesity in children (2–17 years): Of 3,008 children, 28% were overweight (18%) or obese (11%).

Smoking status (adults 18 years and over): Of 32,160 adults, 15% (18% of men and 13% of women) were daily smokers.

Alcohol consumption (adults 18 years and over): Of 31,190 adult patients 25% (30% of men and 21% of women) reported drinking at-risk levels of alcohol.

Adult risk profile: Of the 30,177 patients for whom all three risk factor data were available: 25% had no risk factors 52% had one, 19% had two, and 4% had three.

1 Introduction

This publication is the 13th annual report and the 29th book in the series from the BEACH (Bettering the Evaluation and Care of Health) program, a continuous national study of general practice activity in Australia. It provides the annual results for the period April 2010 to March 2011 inclusive, using details of 95,800 encounters between general practitioners (GPs) and patients (almost a 0.1% sample of all general practice encounters) from a random sample of 958 practising GPs across the country.

Released in parallel with this report is a summary of results from the most recent 10 years of the BEACH program, *A decade of Australian general practice activity 2001–02 to 2010–11*,[1] available at <purl.library.usyd.edu.au/sup/9781920899875>. The BEACH program began in April 1998 and was the culmination of about 20 years research and development work at the University of Sydney. BEACH is currently supported financially by government and private industry (see 'Acknowledgments').

The BEACH program 2010–11 was conducted by the Family Medicine Research Centre (FMRC), University of Sydney, in collaboration with the Australian Institute of Health and Welfare (AIHW), under the *AIHW Act*. The collaboration ceased in March 2011. Since then, the FMRC has continued to conduct the BEACH program.

BEACH is the only continuous randomised study of general practice activity in the world, and the only national program that provides direct linkage of management actions (such as prescriptions, referrals, investigations) to the problem under management. The BEACH database now includes information for almost 1.3 million encounters from 12,831 participants representing about 8,711 individual GPs, almost half the sample frame of actively practising GPs from which the samples are drawn.

1.1 Background

In December 2010, the population of Australia was estimated to be 22.48 million people.[2]

Australia's health expenditure in 2008–09 was $112.8 billion, an average $5,190 per Australian, and 9.0% of GDP in 2008–09. Governments funded 69.7%, with the remainder (31.1%) being paid by the non-government sector.[3] Government expenditure on general practice services (including those of the practice nurses) was more than $5 billion dollars in the 2010–11 BEACH year.[4]

GPs are usually the first port of call in the Australian health care system. Payment for GP visits is largely on a fee-for-service system, there being no compulsory patient lists or registration. People are free to see multiple practitioners and visit multiple practices of their choice. There is a universal medical insurance scheme (managed by Medicare Australia), which covers all or most of a person's costs for a GP visit.

In 2008 in Australia, there were 24,029 practising primary care practitioners (vocationally recognised GPs and other medical practitioners), making up 23,188 full-time equivalents (based on a 40 hour week), or 107.9 per 100,000 people.[5]

From April 2010 to March 2011, Medicare paid rebates for about 118.1 million general practice services (excluding practice nurse items), [4] at an average of about 5.3 GP visits per

head of population or 6.3 visits per person who visited at least once. This equates to about 2.3 million GP-patient encounters per week.

While Medicare statistics provide information about frequencies and costs of visits claimed from Medicare for GP services, they cannot tell us about the content of these visits. The BEACH program fills this gap.

1.2 The BEACH program

In summary, the BEACH program is a continuous national study of general practice activity in Australia. Each year an ever changing random sample of about 1,000 practising GPs participate, each recording details of 100 patient encounters on structured paper based recording sheets. This provides details of about 100,000 GP-patient encounters per year. The BEACH methods are described in Chapter 2 of this report.

A random sample of GPs who claimed at least 375 general practice Medicare items of service in the previous 3 months is regularly drawn from Medicare Australia data by DoHA. GPs are approached by letter and followed up by telephone recruitment. Each participating GP completes details for 100 consecutive GP–patient encounters on structured paper encounter forms (Appendix 1). They also provide information about themselves and their major practice (Appendix 2).

Aims

The three main aims of the BEACH program are to:

- provide a reliable and valid data collection process for general practice that is responsive to the ever-changing needs of information users, and provides insight into the evolving character of GP–patient encounters in Australia
- establish an ongoing database of GP–patient encounter information
- assess patient risk factors and health states, and the relationship these factors have with health service activity.

Current status of BEACH

BEACH began in April 1998 and is now in its 14th year. The BEACH database now includes details of 1,283,100 GP–patient encounters from 12,831 participating GPs. Each year we publish an annual report of BEACH results. This publication reports results from the previous BEACH data year (April 2010 to March 2011) and provides an overview of general practice activity.

A companion publication *A decade of Australian general practice activity 2001–02 to 2010–11*,[1] provides summaries of changes in the most frequent events that have occurred over the decade.

The strengths of the BEACH program

- BEACH is the only national study of general practice activity in the world that is continuous, relying on a random ever-changing sample of GPs, and directly linking management actions to the morbidity under management.
- The sheer size of the GP sample (1,000 per year) and the relatively small cluster of encounters around each GP provide more reliable estimates than a smaller number of GPs with large clusters of patients and/or encounters.[6] Our access to a regular random sample of recognised GPs in active practice, through DoHA, ensures that the GP sample is drawn from a very reliable sample frame of currently active GPs.
- There are sufficient details about the characteristics of all GPs in the sample frame to test the representativeness of the final sample, and to apply post-stratification weighting to correct for any under or over-representation in the sample when compared with the sample frame. The ever-changing nature of the sample (where each GP can participate only once per triennium) ensures reliable representation of what is happening in general practice across the country. The sampling methods ensure that new entrants to the profession are available for selection because the sample frame is based on the most recent Medicare data.
- Where data collection programs use a fixed set of GPs over a long period, they are measuring what that group is doing at any one time, or how that group has changed over time, and there may well be a 'training effect' inherent in longer-term participation. Such measures cannot be generalised to the whole of general practice. Further, where GPs in the group have a particular characteristic in common (for example, all belong to a professional organisation to which not all GPs belong; all use a selected software system which is not used by all GPs), the group is biased and cannot represent all GPs.
- Each GP records for a set number of encounters (100), but there is wide variance among them in the number of patient consultations they conduct in any one year. DoHA therefore provides an individual count of activity level (that is, number of Medicare GP service items claimed in the previous period) for all randomly sampled GPs, allowing us to give a weighting to each GP's set of encounters commensurate with his or her contribution to total general practice encounters. This ensures that the final encounters represent encounters with all GPs.
- The structured paper encounter form leads the GP through each step in the encounter, encouraging entry of data for each element (see Appendix 1), with instructions and an example of a completed form. In contrast, systems such as electronic health records rely on the GP to complete fields of interest without guidance.
- Activities described in BEACH include all patient encounters, not just Medicare paid.
- The medication data include all prescriptions, rather than being limited to those prescribed medications covered by the Pharmaceutical Benefits Scheme (PBS).
- BEACH is the only source of information on medications supplied directly to the patient by the GP, and about the medications GPs advise for over-the-counter (OTC) purchase, the patients to whom they provide such advice and the problems managed in this way.
- The inclusion of other (non-pharmacological) treatments such as clinical counselling and procedural treatments provides a broader view of the interventions used by GPs in the care of their patients than other data sources.
- The link from all management actions (for example, prescribing, ordering tests) to the problem under management provides a measure of the 'quality' of care rather than just a

count of the number of times an action has occurred (for example, how often a specific drug has been prescribed).

- The use of an internationally standard well-structured classification system (ICPC-2)[7] designed specifically for general practice, together with the use of an extended vocabulary of terms which facilitates reliable classification of the data by trained secondary coders, removes the guesswork often applied in word searches of available records (in free text format) and in classification of a concept.
- The use of the World Health Organization's (WHO) Anatomical Therapeutic Chemical Classification for pharmaceuticals at the generic level ensures reporting of medications data is in terms of the international standard.
- The analytical techniques applied to the BEACH data ensure that the clustering inherent in the sampling methods is dealt with. Results are reported with 95% confidence intervals. Users are therefore aware of how reliable any estimate might be.
- Reliability of the methods is demonstrated by the consistency of results over time where change is not expected, and by the measurement of change when it might be expected.

1.3 Using BEACH data with other national data

Users of the BEACH data might wish to integrate information from multiple national data sources, as this can provide a more comprehensive picture of the health and health care of the Australian community. It is therefore important that readers are aware of how the BEACH data differ from those drawn from others. This section summarises differences between BEACH and other national sources of data about general practice in Australia.

The Pharmaceutical Benefits Scheme

Prescribed medications paid for under the Pharmaceutical Benefits Scheme (PBS) are recorded by Medicare Australia. The PBS data:

- count the prescription each time it crosses the pharmacist's counter (so that one prescription written by the GP with five repeats in BEACH would be counted by the PBS six times if the patient filled all repeats)
- count only those prescribed medications subsidised by the PBS and costing more than the minimum subsidy (and therefore covered by the PBS for all patients), or medications prescribed for those holding a Commonwealth concession card or for those who have reached the safety net threshold
- will change with each change in the PBS copayment level for non-Commonwealth concession cardholders – when the copayment level increases, those medications that then fall under the new level will no longer be counted in the PBS for non-Commonwealth concession cardholders[8]
- have no record of the problem being managed (with the exception of authority prescriptions, which require an indication and account for a small proportion of PBS data), and the morbidity cannot be reliably assumed on the basis of the prescription type.[9]

In BEACH:

- total medications include those prescribed (whether covered by the PBS or not), those supplied to the patient directly by the GP, and those advised for OTC purchase
- each prescription recorded reflects the GP's intent that the patient receives the prescribed medication, and the specified number of repeats; the prescription, irrespective of the number of repeats ordered, is counted only once
- the medication is directly linked to the problem being managed by the GP
- there is no information on the number of patients who do not present their prescription to be filled (this also applies to the PBS).

These differences have a major impact on the numbers of prescriptions counted and also affect their distribution. For example, the majority of broad spectrum antibiotics such as amoxycillin fall under the PBS minimum subsidy level and would not be counted in the PBS data, except where patients received the medication under the PBS because they are Commonwealth concession cardholders or had reached the annual safety net threshold.[8]

Medicare Benefits Schedule

Consultations with GPs that are paid for in part or in full under the Medicare Benefits Schedule (MBS) are recorded by Medicare Australia.

- Publicly available MBS claims data do not include data about patients and encounters funded through the Department of Veterans' Affairs (DVA).
- The MBS data include GP services that have been billed to Medicare. BEACH includes all consultations, irrespective of whether a charge is made or who pays for them.
- The MBS data reflect the item number charged to Medicare for a service and some patient demographics, but hold no information about the content of the consultation.
- In 2010–11, BEACH participants were limited to recording three Medicare item numbers for each encounter. In contrast, MBS data include all Medicare item numbers claimed. In the BEACH data set this may result in a lower number of 'other' Medicare items than would be counted in the Medicare data.
- In activities of relatively low frequency with a skewed distribution across individual GPs, the relative frequency of the event in the BEACH data may not reflect that reported in the MBS data. For example, a study of early uptake of some enhanced primary care items by GPs demonstrated in 2002 that almost half the enhanced primary care items claimed through the MBS came from about 6% of active GPs.[10] Where activity is so skewed across the practising population, a national random sample will provide an underestimate of activity because the sample reflects the population rather than the minority.
- One of the advantages of BEACH over the MBS is also the relative consistency over time of the data collection form. BEACH is relatively resilient to changes in MBS payment policies, such as the inclusion or removal of items from the MBS.

Pathology data from the MBS

Pathology tests undertaken by pathologists that are charged to Medicare are recorded by Medicare Australia. However, these Medicare data are not comparable with BEACH data.

- MBS pathology data reflect pathology orders made by medical specialists and GPs. About 70% of the volume of MBS pathology data are generated by GP orders.[11]
- Each pathology company can respond differently to a specific test order label recorded by the GP. So the tests completed by a pathologist in response to a GP order for a full blood count may differ between companies.
- The pathology companies can charge through the MBS only for the three most expensive items undertaken, even when more were actually done. This is called 'coning' and is part of DoHA pathology payment system. This means that the tests recorded in the MBS include only those charged for, not all those that were done. Coning applies only to GP pathology orders, not to those generated by medical specialists.
- This means that the MBS pathology data reflect those tests billed to the MBS after interpretation of the order by the pathologist, and after selection of the three most expensive items.
- Pathology MBS items contain pathology tests that have been grouped on the basis of cost (for example, 'any two of the following … tests'). Therefore an MBS item often does not give a clear picture of the precise tests performed.

In BEACH, the pathology data:

- include details of pathology tests ordered by the participating GPs; however, the GP is limited to the recording of five tests or battery of tests at each encounter, and as the number of tests/batteries ordered on any single occasion is increasing,[12] an increasing number of additional tests ordered will be lost
- reflect the terms used by GPs in their orders to pathologists, and for reporting purposes these have been grouped by the MBS pathology groups for comparability.

The distributions of the two data sets will therefore differ, reflecting on the one hand the GP order and on the other the MBS-billed services from the pathologist.

Pathology ordering by GPs is described in Chapter 12 of this report. Those interested in pathology test ordering by GPs should also view the following publications:

- *Are rates of pathology test ordering higher in general practices co-located with pathology collection centres?*[13] This publication investigated the independent effect of general practice co-location with pathology collection centres on GP pathology test ordering in Sydney and Melbourne metropolitan areas.
- *Evidence-practice gap in GP pathology test ordering: a comparison of BEACH pathology data and recommended testing*.[14]
- *Changes in pathology ordering by general practitioners in Australia 1998–2001*.[15]

Imaging data from the MBS

Some of the issues discussed regarding pathology data also apply to imaging data. Although coning is not an issue for imaging, radiologists can decide whether the test ordered by the GP is the most suitable and whether to undertake other tests of their choosing. The MBS data

therefore reflect the tests that are actually undertaken by the radiologist, whereas the BEACH data reflect those ordered by the GP.

The National Health Survey

The National Health Survey, conducted by the Australian Bureau of Statistics, provides estimates of population prevalence of specific diseases, and a measure of the problems taken to the GP by people in the 2 weeks before the survey.

- Prevalence estimates are based on self-reported morbidity from a representative sample of the Australian population, using a structured interview to elicit health-related information from participants.[16]
- Community surveys such as the National Health Survey have the advantage of accessing people who do not go to a GP as well as those who do. They can therefore provide an estimate of population prevalence of disease and a point estimate of incidence of disease.
- Self-report has been demonstrated to be susceptible to misclassification because of a lack of clinical corroboration of diagnoses.[17]

Management rates of health problems in general practice represent GP workload for a health problem. BEACH can be used to estimate the period incidence of diagnosed disease presenting in general practice through the number of new cases of that disease. The management rates of individual health problems and management actions can be extrapolated to national management rates.

The general practice patient population sits between the more clinical hospital-based population and the general population,[18,19] with about 83% of Australians visiting a GP at least once in 2009–10 (personal communication DoHA, June 2010). Disease management rates are a product of both the prevalence of the disease/health problem in the population, and the frequency with which a patient visits a GP for the treatment of that problem. Those who are older and/or have more chronic disease are therefore likely to visit more often, and have a greater chance of being sampled in the encounter data.

There was a substudy of disease prevalence among patients seen in general practice (using the Supplementary Analysis of Nominated Data method, see Section 2.6). Those interested in disease prevalence should refer to the following papers: *Estimating prevalence of common chronic morbidities in Australia*,[20] and *Prevalence and patterns of multimorbidity in Australia*.[21]

1.4 Access to BEACH data

Different bundles of BEACH data are available to the general public, to BEACH-participating organisations, and to other organisations and researchers.

Public domain

This annual publication provides a comprehensive view of general practice activity in Australia. The BEACH program has generated many papers on a wide variety of topics in journals and professional magazines. All published material from BEACH is available at <www.fmrc.org.au/publications/>.

Since April 1998, a section at the bottom of each encounter form has been used to investigate aspects of patient health or health care delivery not covered by general practice

consultation-based information. These additional substudies are referred to as SAND (Supplementary Analysis of Nominated Data). The SAND methods are described in Section 2.6. Abstracts of results and the research tools used in all SAND substudies from April 1998 to March 2011 have been published. Those from:

- April 1998 to March 1999 were published in *Measures of health and health care delivery in general practice in Australia*[22]
- April 1999 to July 2006 were published in *Patient-based substudies from BEACH: abstracts and research tools 1999–2006*[23]
- August 2006 to March 2010 were published in the BEACH annual report for each year[24-27]
- April 2010 to March 2011 are included in Chapter 15 of this report.

Abstracts of results for all SAND substudies are also available on the FMRC website <www.fmrc.org.au/publications/SAND_abstracts.htm> where you can search by topic.

Participating organisations

Organisations providing funding for the BEACH program receive summary reports of the encounter data quarterly, and standard reports or specifically designed analyses about their subjects of interest. Participating organisations also have direct access to straightforward analyses on any selected problem, medication, pathology or imaging test through an interactive web server. All data made available to participating organisations have been further 'de-identified'. Patients' encounter data are not identifiable even from the original forms, but are further stripped of date of birth (replaced with age in years and months) and postcode of residence (replaced with state and area type). GP characteristics data are provided only in the form of grouped output (for example, GPs aged less than 35 years) to any external organisation.

External purchasers of reports

Non-contributing organisations may purchase standard reports or other ad hoc analyses. Charges are outlined at <www.fmrc.org.au/purchase.htm>. The FMRC should be contacted for specific quotations. Contact details are provided at the front of this publication.

Analysis of the BEACH data is a complex task. The FMRC has designed standard reports that cover most aspects of a subject under investigation. Examples of a problem-based standard report (subject: ischaemic heart disease in patients aged 45 years and over), a group report (subject: female patients aged 15–24 years) and a pharmacological-based standard report (subject: allopurinol) for a single year's data are available at <www.fmrc.org.au/purchase.htm>.

Individual data analyses can be done where the specific research question is not adequately answered through standard reports.

2 Methods

In summary:

- each year, BEACH involves a new random sample of about 1,000 GPs
- each GP records details about 100 doctor–patient encounters of all types
- the GP sample is a rolling (ever-changing) sample, with about 20 GPs participating in any 1 week, 50 weeks a year
- each GP can be selected only once per quality assurance (QA) triennium (that is, once every 3 years)
- the encounter information is recorded by the GPs on structured paper encounter forms (Appendix 1)
- GP participants also complete a questionnaire about themselves and their practice (Appendix 2).

2.1 Sampling methods

The source population includes all vocationally registered GPs and all general practice registrars who claimed a minimum of 375 general practice A1 Medicare items in the most recently available 3-month Medicare data period (which equates to 1,500 A1 Medicare claims a year). This ensures inclusion of the majority of part-time GPs, while excluding those who are not in private practice but claim for a few consultations a year.

The Medicare Statistics section of the DoHA updates the sample frame from the Medicare records quarterly, leaving out of the sample frame any GPs already randomly sampled in the current triennium, and draws a new sample from those currently in the sample frame. This ensures the timely addition of new entries to the profession, and timely exclusion of those GPs who have stopped practising, or have already participated or been approached in the current triennium.

2.2 Recruitment methods

The randomly selected GPs are approached by letter, posted to the address provided by DoHA.

- Over the following 10 days, the telephone numbers generated from the Medicare data are checked using the electronic white and yellow pages. This is necessary because many of the telephone numbers provided from the Medicare data are incorrect.
- The GPs are then telephoned in the order they were approached and, referring to the approach letter, asked whether they will participate.
- This initial telephone contact with the practice often indicates that the selected GP has moved elsewhere, but is still in practice. Where new address and/or telephone number can be obtained, these GPs are followed up at their new address.
- GPs who agree to participate are set an agreed recording date several weeks ahead.
- A research pack is sent to each participant before the planned start date.

- Each GP receives a telephone reminder early in the agreed recording period – this also provides the GP with an opportunity to ask questions about the recording process.
- GPs can use a 'freecall' (1800) number to ring the research team with any questions during their recording period.
- Non-returns are followed up by regular telephone calls for 3 months.
- Participating GPs earn clinical audit points towards their QA requirements through the Royal Australian College of General Practitioners (RACGP) and/or the Australian College of Rural and Remote Medicine (ACRRM). As part of this QA process, each receives an analysis of his or her results compared with those of nine other de-identified GPs who recorded at about the same time. Comparisons with the national average and with targets relating to the National Health Priority Areas are also provided. In addition, GPs receive some educational material related to the identification and management of patients who smoke or consume alcohol at hazardous levels. Additional points can be earned if the participant chooses to do a follow-up audit of smoking and alcohol consumption among a sample of patients about 6 months later.

2.3 Ethics approval and informed patient consent

Ethics approval for this study was obtained from the Human Ethics Committee of the University of Sydney and from the Ethics Committee of the Australian Institute of Health and Welfare.

Although the data collected by the GPs is not sufficient to identify an individual patient, informed consent for inclusion of the encounter details is required from each patient. GPs are instructed to ensure that all patients presenting during their recording period are provided with a Patient Information card (Appendix 3) and that they ask the patient if they are happy for their data to be included in the study. If the patient refuses, details of the encounter are not recorded. This is in accordance with the requirements for ethics approval for the BEACH program.

2.4 Data elements

BEACH includes three interrelated data collections: GP characteristics, encounter data and patient health status. An example of the form used to collect the encounter data and the data on patient health status is included in Appendix 1. The GP characteristics questionnaire is provided in Appendix 2. The GP characteristic and encounter data collected are summarised below. Patient health status data are described in Section 2.6.

GP profile form (Appendix 2)

- **GP characteristics:** age and sex, years in general practice, number of direct patient care hours worked per week, country of graduation, postgraduate general practice training status, Fellow of the RACGP status, Fellow of the Australian College of Rural and Remote Medicine status, usual bulk-billing behaviour, use of computers at work, work undertaken in other clinical settings.
- **Practice characteristics:** postcode and GP Division of major practice, number of individual, and number of full-time equivalent GPs working in the practice, number of individual and number of full-time equivalent practice nurses working in the practice,

usual after-hours care arrangements, whether the practice is accredited, whether it is a teaching practice.

Encounter recording form (Appendix 1)

- **Encounter data:** date of consultation, type of consultation (direct/indirect) (tick box options), up to three MBS/DVA item numbers (where applicable), and other payment source (where applicable) (tick boxes).
- **Patient data:** date of birth, sex and postcode of residence. Tick boxes (yes/no options) are provided for Commonwealth concession cardholder, holder of a Repatriation health card (from DVA), non-English-speaking background (patient self-report – a language other than English is the primary language at home), Aboriginal person (self-identification), and Torres Strait Islander person (self-identification). Space is provided for up to three patient reasons for encounter (RFEs) (see 'Glossary').
- **The problems managed** at encounter (at least one and up to four). Tick boxes are provided to denote the status of each problem as new or continuing for the patient and whether the problem is considered by the GP to be work-related.
- **Management of** each problem, including:
  - medications prescribed, supplied by the GP and advised for over-the-counter purchase including brand name, form (where required), strength, regimen, status (whether new or continuing medication for this problem for this patient) and number of repeats
  - other treatments provided for each problem, including counselling, advice and education, and procedures undertaken, and whether the recorded other treatment was provided by practice nurse (tick box)
  - new referrals to medical specialists, allied health services, emergency departments, and hospital admissions
  - investigations, including pathology tests, imaging and other investigations ordered at the encounter.

2.5 The BEACH relational database

The BEACH relational database is described diagrammatically in Figure 2.1. Note that: all variables can be directly related to GP and patient characteristics, and to the encounter; RFEs have only an indirect relationship with problems managed, as a patient may describe one RFE (such as 'repeat prescriptions') that is related to multiple problems managed, or several RFEs (such as 'runny nose' and 'cough') that relate to a single problem (such as upper respiratory tract infection) managed at the encounter (see Section 6.3); all types of management are directly related to the problem being managed.

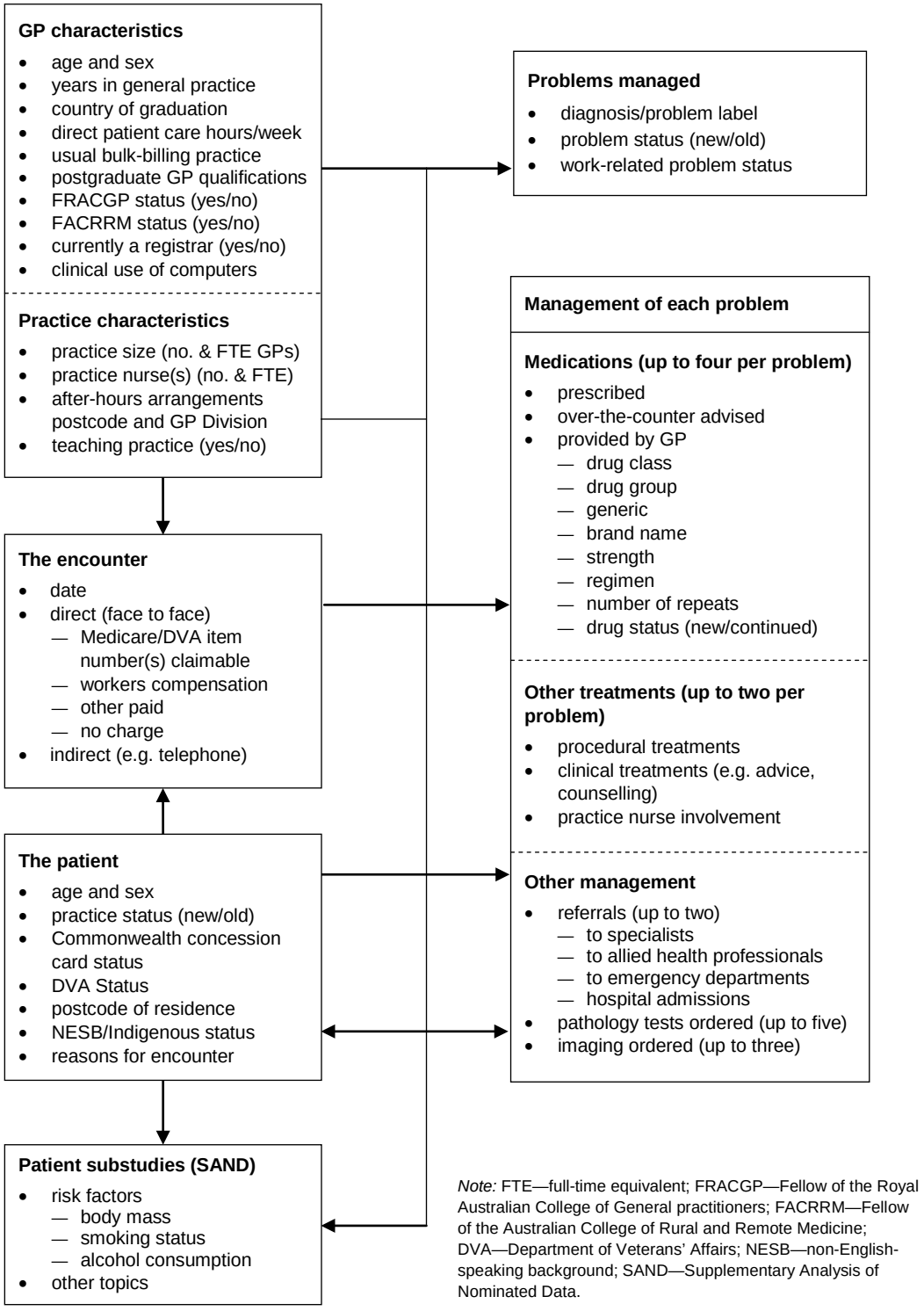


Figure 2.1: The BEACH relational database

2.6 Supplementary Analysis of Nominated Data

A section at the bottom of each recording form investigates aspects of patient health or health care delivery in general practice not covered by the consultation-based data. These additional substudies are referred to as SAND, Supplementary Analysis of Nominated Data.

- Each year the 12 month data period is divided into 10 blocks, each of 5 weeks, with three substudies per block. The research team aims to include data from about 100 GPs in each block.
- Each GP's pack of 100 forms is made up of 40 forms that ask for the start and finish times of the encounter, and include questions about patient risk factors: patient height and weight (used to calculate body mass index, BMI), alcohol intake and smoking status (patient self-report). The methods and results of topics in the SAND substudies for alcohol consumption, smoking status and BMI are reported in Chapter 14. The start and finish times collected on these encounters are used to calculate the length of consultation. The length of consultation for Medicare-claimable encounters is reported in Section 5.3.
- The remaining 60 forms in each pack are divided into two blocks of 30, so each SAND block includes about 3,000 records. Some topics are repeated to increase sample size. Different questions are asked of the patient in each block and these vary throughout the year.
- The order of SAND sections is rotated in the GP recording pack, so that 40 patient risk factor forms may appear first, second or third in the pad. Rotation of ordering ensures there was no order effect on the quality of the information collected.

Abstracts of results and the research tools used in all SAND substudies from April 1998 to March 2011 have been published. Those:

- from April 1998 to March 1999 were published in *Measures of health and health care delivery in general practice in Australia*[22]
- from April 1999 to July 2006 were published in *Patient-based substudies from BEACH: abstracts and research tools 1999–2006*[23]
- conducted between August 2006 and March 2010 have been published in each of the general practice activity annual reports[24-27]
- conducted in the 2010–11 BEACH year are provided in Chapter 15 of this publication.

Abstracts of results for all SAND substudies are also available on the FMRC's website <www.fmrc.org.au/publications/SAND_abstracts.htm>.

2.7 Statistical methods

The analysis of the 2010–11 BEACH data was conducted with Statistical Analysis System (SAS) version 9.1.3,[28] and the encounter is the primary unit of inference. Proportions are used only when describing the distribution of an event that can arise only once at a consultation (for example, patient or GP age and sex), or to describe the distribution of events within a class of events (for example, problem A as a percentage of total problems). Due to rounding, proportions may not always add to exactly 100%.

Rates per 100 encounters are used when an event can occur more than once at the consultation (for example, RFEs, problems managed or medications).

Rates per 100 problems are also used when a management event can occur more than once per problem managed. In general, the results present the number of observations (*n*), the rate per 100 encounters, and (in the case of management actions) the rate per 100 problems managed, and the 95% confidence interval.

BEACH is a single stage cluster sample study design, each 100 encounters forming a cluster around each GP participant. In cluster samples, variance needs to be adjusted to account for the correlation between observations within clusters. Procedures in SAS version 9.1.3 were used to calculate the intracluster correlation, and adjust the confidence intervals accordingly.[28]

Post-stratification weighting of encounter data adjusts for: any difference in the age–sex distribution of the participating GPs and those GPs in the sample frame from which the samples were drawn; and for the varying activity level of each GP (measured by number of claims each has made in the previous 12 months from Medicare Australia) (see Chapter 3).

2.8 Classification of data

The following data elements are classified according to the International Classification of Primary Care – Version 2 (ICPC-2), a product of the World Organization of Family Doctors (Wonca):[7]

- patient reasons for encounter (RFEs)
- problems managed
- clinical treatments (for example, counselling, advice)
- procedural treatments
- referrals
- investigations ordered (including pathology, imaging and other investigations).

The ICPC-2 is used in more than 45 countries as the standard for data classification in primary care. It is accepted by the World Health Organization (WHO) in the WHO Family of International Classifications,[29] and is the declared national standard in Australia for reporting of health data from general practice and patient self-reported health information.[30]

The ICPC-2 has a biaxial structure, with 17 chapters on one axis (each with an alphabetic code) and seven components on the other (numeric codes) (Figure 2.2). Chapters are based on body systems, with additional chapters for psychological and social problems. Component 1 includes symptoms and complaints. Component 7 covers diagnoses – it can also be expanded to provide data about infections, injuries, neoplasms, congenital anomalies and 'other' diagnoses.

Component 2 (diagnostic, screening and prevention) is often applied in describing the problem managed (for example, check-up, immunisation). Components 3 to 6 cover other processes of care, including referrals, other (non-pharmacological) treatments and orders for pathology and imaging. The components are standard and independent throughout all chapters. The updated component groupings of ICPC-2 codes, released by the Wonca International Classification Committee in 2004[31] have been used in this report.

The ICPC-2 is an excellent epidemiological tool. The diagnostic and symptom rubrics have been selected for inclusion on the basis of their relative frequency in primary care settings, or because of their relative importance in describing the health of the community. ICPC has about 1,370 rubrics and these are sufficient for meaningful analyses. However, reliability of

data entry, using ICPC-2 alone, requires a thorough knowledge of the classification for correct classification of a concept to be ensured.

In 1995, recognising a need for a coding and classification system for general practice electronic health records, the Family Medicine Research Centre (FMRC) (then Unit) developed an extended clinical terminology classified according to the ICPC, now called ICPC-2 PLUS.[32] This is an interface terminology, developed from all the terms used by GPs in studies such as the Australian Morbidity and Treatment Survey 1990–91 (113,468 encounters),[33] A comparison of country and metropolitan general practice 1990–91 (51,277 encounters),[34] the Morbidity and Therapeutic Index 1992–1998 (a clinical audit tool that was available to GPs) (approximately 400,000 encounters), and BEACH 1998–2011 (about 1.3 million encounters), that together make up about 2.7 million encounter records, involving more than 4 million free text descriptions of problems managed and a further 4 million for patient reasons for encounter. These terms are classified according to ICPC-2 to ensure international standards for reporting. Readers interested in seeing how coding works can download the ICPC-2 PLUS Demonstrator at <www.fmrc.org.au/icpc2plus/demonstrator.htm>.

When the free-text data are received from the GPs, trained secondary coders (who are undergraduate students), code the data in more specific terms using ICPC-2 PLUS. This ensures high coder reliability and automatic classification of the concept, and provides the ability to 'ungroup' such ICPC-2 rubrics as 'other diseases of the circulatory system' and select a specific disease from the terms within it.

Components	A	B	D	F	H	K	L	N	P	R	S	T	U	W	X	Y	Z
1. Symptoms, complaints																	
2. Diagnostic, screening, prevention																	
3. Treatment, procedures, medication																	
4. Test results																	
5. Administrative																	
6. Other																	
7. Diagnoses, disease																	

A	General	L	Musculoskeletal	U	Urinary
B	Blood, blood-forming	N	Neurological	W	Pregnancy, family planning
D	Digestive	P	Psychological	X	Female genital
F	Eye	R	Respiratory	Y	Male genital
H	Ear	S	Skin	Z	Social
K	Circulatory	T	Metabolic, endocrine, nutritional		

Figure 2.2: The structure of the International Classification of Primary Care – Version 2 (ICPC-2)

Presentation of data classified in ICPC-2

Statistical reporting is almost always at the level of the ICPC-2 classification (for example, acute otitis media/myringitis is ICPC-2 code H71). However, there are some exceptions where data are grouped either above the ICPC-2 level or across the ICPC-2 level. These grouped morbidity, pathology and imaging codes are defined in Appendix 4 available at: <purl.library.usyd.edu.au/sup/9781920899868>.

Reporting morbidity with groups of ICPC-2 codes

When recording problems managed, GPs may not always be very specific. For example, in recording the management of hypertension, they may simply record the problem as 'hypertension'. In ICPC-2, 'hypertension, unspecified' is classified as 'uncomplicated hypertension' (code K86). There is another code for 'complicated hypertension' (K87). In some cases the GP may simply have failed to specify that the patient had hypertension with complications. The research team therefore feels that for national data reporting, it is more reliable to group the codes K86 and K87 and label this 'Hypertension*' – the asterisk indicating that multiple ICPC-2 codes (as in this example) or ICPC-2 PLUS codes (see below) are included. Appendix 4, Table A4.1 lists the codes included in these groups.

Reporting morbidity with groups of ICPC-2 PLUS codes

In other cases, a concept can be classified within (but be only part of) multiple ICPC-2 codes. For example, osteoarthritis is classified in ICPC-2 in multiple broader codes according to site, such as L92 – shoulder syndrome (includes bursitis, frozen shoulder, osteoarthritis of shoulder, rotator cuff syndrome). When reporting osteoarthritis in this publication, all the more specific osteoarthritis ICPC-2 PLUS terms classified within all the appropriate ICPC-2 codes are grouped. This group is labelled 'Osteoarthritis*' – the asterisk again indicating multiple codes, but in this case they are PLUS codes rather than ICPC-2 codes. Appendix 4, Table A4.1 lists the codes included in these groups.

Reporting chronic morbidity

Chronic conditions are medical conditions characterised by a combination of the following characteristics: duration that has lasted or is expected to last 6 months or more, a pattern of recurrence or deterioration, a poor prognosis, and consequences or sequelae that affect an individual's quality of life.

To identify chronic conditions, a chronic condition list[35] classified according to ICPC-2 was applied to the BEACH data set. In general reporting, both chronic and non-chronic conditions (for example, diabetes and gestational diabetes) may have been grouped together when reporting (for example, diabetes – all*). When reporting chronic morbidity, only problems regarded as chronic have been included in the analysis. Where the group used for the chronic analysis differs from that used in other analyses in this report, they are marked with a double asterisk. Codes included in the chronic groups are provided in Appendix 4, Table A4.2.

Reporting pathology and imaging test orders

All the pathology and imaging tests are coded very specifically in ICPC-2 PLUS, but ICPC-2 classifies pathology and imaging tests very broadly (for example, a test of cardiac enzymes is classified in K34 – Blood test associated with the cardiovascular system; a CT scan of the lumbar spine is classified as L41 – Diagnostic radiology/imaging of the musculoskeletal system). In Australia, the MBS classifies pathology and imaging tests in groups that are relatively well recognised. The team therefore regrouped all pathology and imaging ICPC-2 PLUS codes into MBS standard groups. This allows comparison of data between data sources. The groups are marked with an asterisk, and inclusions are provided in Appendix 4, Tables A4.8 and A4.9.

Classification of pharmaceuticals

Pharmaceuticals that are prescribed, provided by the GP or advised for over-the-counter purchase are coded and classified according to an in-house classification, the Coding Atlas for Pharmaceutical Substances (CAPS).

This is a hierarchical structure that facilitates analysis of data at a variety of levels, such as medication class, medication group, generic composition and brand name.

When strength and regimen are combined with the CAPS code, we can derive prescribed daily dose for any prescribed medication or group of medications.

CAPS is mapped to the Anatomical Therapeutic Chemical (ATC)[36] classification, which is the Australian standard for classifying medications at the generic level.[30] The ATC has a hierarchical structure with five levels. For example:

- Level 1: C – Cardiovascular system
- Level 2: C10 – Serum lipid reducing agents
- Level 3: C10A – Cholesterol and triglyceride reducers
- Level 4: C10AA – HMG CoA reductase inhibitors
- Level 5: C10AA01 – Simvastatin (the generic drug).

Use of the pharmaceutical classifications in reporting

For pharmaceutical data, there is the choice of reporting in terms of the CAPS coding scheme or the ATC. They each have advantages in different circumstances.

In the CAPS system, a new drug enters at the product and generic level, and is immediately allocated a generic code. Therefore, the CAPS classification uses a bottom-up approach.

In the ATC, a new generic may initially enter the classification at any level (1 to 5), not always at the generic level. Reclassification to lower ATC levels may occur later. Therefore, the ATC uses a top-down approach.

When analysing medications across time, a generic medication that is initially classified to a higher ATC level will not be identifiable in that data period and may result in under-enumeration of that drug during earlier data collection periods.

- When reporting the 2010–11 annual results for pharmaceutical data, the CAPS database is used in tables of the 'most frequent medications' (Tables 9.2 to 9.4).
- When reporting the annual results for pharmaceuticals in terms of the ATC hierarchy (Table 9.1), ATC levels 1, 3, and 5 are used. The reader should be aware that the results reported at the generic level (Level 5) may differ slightly from those reported in the 'most frequent medication' tables for the reasons described above.

2.9 Quality assurance

All morbidity and therapeutic data elements were secondarily coded by staff entering key words or word fragments, and selecting the required term or label from a pick list. This was then automatically coded and classified by the computer. To ensure reliability of data entry we use computer-aided error checks ('locks') at the data entry stage, and a physical check of samples of data entered versus those on the original recording form. Further logical data checks are conducted through SAS regularly.

2.10 Validity and reliability

A discussion of the reliability and validity of the BEACH program has been published elsewhere.[37] This section touches on some aspects of reliability and validity of active data collection from general practice that should be considered by the reader.

In the development of a database such as BEACH, data gathering moves through specific stages: GP sample selection, cluster sampling around each GP, GP data recording, secondary coding and data entry. At each stage the data can be invalidated by the application of inappropriate methods. The methods adopted to ensure maximum reliability of coding and data entry have been described above. The statistical techniques adopted to ensure valid analysis and reporting of recorded data are described in Section 2.7. Previous work has demonstrated the extent to which a random sample of GPs recording information about a cluster of patients represents all GPs and all patients attending GPs.[38] Other studies have reported the degree to which GP-reported patient RFEs and problems managed accurately reflect those recalled by the patient,[39] and the reliability of secondary coding of RFEs[40] and problems managed.[33] The validity of ICPC as a tool with which to classify the data has also been investigated in earlier work.[41]

However, the question of the extent to which the GP-recorded data are a reliable and valid reflection of the content of the encounter must also be considered. In many primary care consultations, a clear pathophysiological diagnosis is not reached. Bentsen[42] and Barsky[43] suggest that a firm and clear diagnosis is not apparent in about half of GPs' consultations, and others suggest the proportion may be even greater.[44] Further, studies of general ambulatory medical practice have shown that a large number of patients presenting to a primary care practitioner are without a serious physical disorder.[45,46] As a result, it is often necessary for a practitioner to record a problem in terms of symptoms, signs, patient concerns, or the service that is requested, such as immunisation. For this reason, this report refers to patient 'problems' rather than 'diagnoses'.

A number of studies have demonstrated wide variance in the way a GP perceives the patient's RFE and the manner in which the GP describes the problem under management. In a direct observational study of consultations via a one-way mirror, Bentsen demonstrated differences in the way practitioners labelled problems, and suggested that clinical experience may be an important influence on the identification of problems within the consultation.[42] Two other factors that might affect GPs' descriptions of patient RFEs have been identified: although individuals may select the same stimuli, some label each stimulus separately, whereas others cluster them under one label; and individuals differ in the number of stimuli they select (selective perception).[47]

The extent to which therapeutic decisions may influence the diagnostic label selected has also been discussed. Howie[48] and Anderson[45] argue that, while it is assumed that the diagnostic process used in general practice is one of symptom → diagnosis → management, the therapeutic method may well be selected on the basis of the symptom, and the diagnostic label chosen last. They suggest that the selection of the diagnostic label is therefore influenced by the management decision already made.

Anderson has also pointed out that the therapeutic decision may be influenced by fashion, and, in turn, this affects the selection of the problem label. He gives the example of a rise in the occurrence of neurotic depression in parallel with a decrease in the use of menopause as a diagnosis in the United Kingdom, and suggests this may be the result of a change in the preferred treatment from oestrogen therapy to antidepressants.[45] This should be remembered when considering the changes in general practice described in this report.

Alderson contends that to many practitioners, 'diagnostic accuracy is only important to the extent that it will assist them in helping the patient'. He further suggests that if major symptoms are readily treatable, some practitioners may feel no need to define the problem in diagnostic terms.[49] Crombie stated that in the second and third national morbidity surveys in the United Kingdom there was 'enormous variability in the rates at which doctors perceive and record illnesses'. He concluded that the probable cause arose from the different ways in which GPs gave priority in their perceptions and recording of certain morbidities while discounting or ignoring others. He was unable to account statistically for this variation by the effect of geography, age, sex or class differences in the practice populations.[50] Differences in the way male and female GPs label problems also appear to be independent of such influences.[51]

These problems are inherent in the nature of general practice. Knottnerus argues that the GP is confronted with a fundamentally different pattern of problems from the medical specialist, the GP often having to draw up general diagnostic hypotheses related to probability, severity and consequences.[52] Anderson suggests that morbidity statistics from family practice should therefore be seen as 'a reflection of the physician's diagnostic opinions about the problems that patients bring to them rather than an unarguable statement of the problems managed'.[45] In any case, doctors base their actions on problems as they perceive them.

While these findings regarding limitations in the reliability and validity of practitioner-recorded morbidity should be kept in mind, they apply equally to data drawn from medical records, whether paper or electronic, as they do to active data collection methods.[53,54] There is as yet no more reliable method of gaining detailed data about morbidity and its management in general practice. Further, irrespective of the differences between individual GPs in their labelling of the problems, morbidity data collected by GPs in active data collection methods have been shown to provide a reliable overview of the morbidity managed in general practice.[55]

2.11 Extrapolated national estimates

A section at the end of each chapter highlights major changes that have occurred over the decade 2001–02 to 2010–11. These sections summarise results published in the companion publication, *A decade of Australian general practice activity 2001–02 to 2010–11*.[1] Where the results demonstrate a significant change over time, the estimated national change across total GP Medicare services from 2001–02 to 2010–11 can be calculated using the method detailed below. Note that extrapolations are always based on rate per 100 encounters rather than rate per 100 problems because there is no independent measure of the number of problems managed in Australian general practice. In contrast, the number of national encounters can be drawn from Medicare claims data.

In this report, we also occasionally extrapolate data for the single year 2010–11 to give the reader some feeling of the real size of the issue across Australian general practice.

When extrapolating from a single time point we:

- divide the 'rate per 100 encounters' of the selected event by 100, and then multiply by the total number of general practitioner service items claimed through Medicare in that year, 118.1 million in 2010–11 (rounded to the nearest 100,000, see Table 2.1), to give the estimated national number of events in 2010–11.

When extrapolating measured change over the decade to national estimates, we:

- divide the 'rate per 100 encounters' of the selected event for 2001–02 by 100, and then multiply by the total number of general practitioner service items claimed through Medicare in that year, 99.9 million (rounded to the nearest 100,000, see Table 2.1), to give the estimated national number of events in 2001–02.
- repeat the process using data for 2010–11.

The difference between the two estimates gives the estimated national change in the frequency of that event over the decade. Estimates are rounded to the nearest 100,000 if more than a million and to the nearest 10,000 if below a million.

Change is expressed as the estimated increase or decrease over the study period (from 2001–02 to 2010–11), in the number of general practice contacts for that event (for example, an increase or decrease in the number of GP management contacts with problem X); or an increase or decrease in the number of times a particular medication type was prescribed in Australia in 2010–11, when compared with 2001–02.

Table 2.1 provides the total number of general practice professional service items claimed from Medicare in each financial year from 2001–02 to 2010–11. Extrapolations are calculated using the number of GP Medicare items claimed rounded to the nearest 100,000.

Table 2.1: Number of general practice professional services claimed from Medicare Australia each financial year, 2001–02 to 2010–11 ('000)

	2001–02	2002–03	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11[(a)]
Number of GP MBS items	99,921	96,919	96,330	98,180	101,095	103,433	109,518	113,045	116,646	118,126
Rounded number of GP MBS items	99,900	96,900	96,300	98,200	101,100	103,400	109,500	113,000	116,600	118,100

(a) Medicare data for the 2010–11 year included data from the April 2010 to March 2011 quarters because the 2010–11 financial year data were not available at the time of preparation of this report.

Source: Medicare statistics[4]

Example of extrapolation: Change in the number of problems managed by GPs nationally

There was a significant increase in the number of problems managed at encounter, from 143.4 per 100 encounters in 2001–02 to 152.5 in 2010–11 (see Table 7.2 in *A decade of Australian general practice activity 2001–02 to 2010–11*[1]). The calculation used to extrapolate the effect of this change across Australia is:

(143.4/100) x 99.9 million = 143.3 million problems managed nationally in 2001–02, and
(152.5/100) x 118.1 million = 180.1 million problems managed nationally in 2010–11.

This suggests there were 36.9 million (180.1 million minus 143.2 million) more problems managed at GP–patient encounters in Australia in 2010–11 than in 2001–02.

This is the result of the compound effect of the increase in the number of problems managed by GPs at encounters **plus** the increased number of visits over the decade across Australia.

Considerations and limitations in extrapolations

The extrapolations to the total events occurring nationally in any one year are only estimates. They may provide:

- an underestimate of the true 'GP workload' of a condition/treatment because the extrapolations are made to GP Medicare items claimed, not to the total number of GP encounters per year – an additional 5% or so of BEACH encounters annually include encounters paid by sources other than Medicare, such as DVA, state governments, workers compensation insurance, and employers.
- an underestimate of activities of relatively low frequency with a skewed distribution across individual GPs. For example, a study of early uptake of some enhanced primary care items by GPs demonstrated that almost half the enhanced primary care items claimed through the MBS came from about 6% of active GPs.[10] Where activity is so skewed across the practising population, a national random sample will provide an underestimate of activity because the sample reflects the population rather than the minority.

Further, the base numbers used in the extrapolations are rounded to the nearest 100,000, and extrapolation estimates are rounded to the nearest 100,000 if more than a million and to the nearest 10,000 if below a million. However, the rounding has been applied to all years, so the effect on measures of change will be very small. Therefore, the extrapolation still provides an indication of the size of the effect of measured change nationally.

Extrapolations are based on the unit of the encounter because the number of national encounters is quantifiable using Medicare claims data. However, the reader should be aware that where an event can occur more than once per encounter, the extrapolation represents the number of occasions at which that event occurs in general practice encounters, rather than the number of encounters where that event occurs.

3 The sample

This chapter describes the GP sample and sampling methods used in the BEACH program. The methods are only summarised in this chapter. A more detailed explanation of the BEACH methods are described in Chapter 2.

A summary of the annual BEACH samples are reported for each year from 2001–02 to 2010–11 in the companion report *A decade of Australian general practice activity 2001–02 to 2010–11*.[1]

3.1 Response rate

A random sample of GPs who claimed at least 375 general practice Medicare items of service in the previous 3 months is regularly drawn from Medicare claims data by the Australian Government Department of Health and Ageing (DoHA) (see Chapter 2).

Contact was attempted with 4,493 GPs – 16.3% could not be contacted. More than one-third of these had moved, retired or died, and were untraceable (Table 3.1), although more than half were those with whom contact could not be established after five calls. Younger GPs were harder to contact. Of the GPs approached who were aged less than 35 years, 27.6% were no longer at that practice and could not be traced. These would largely be registrars moving through practices during training. In contrast, 15.4% of GPs aged 35 years and over were not traceable (results not shown).

The final participating sample consisted of 958 practitioners, representing 25.5% of those who were contacted and available, and 21.3% of those with whom contact was attempted (Table 3.1).

Table 3.1: Recruitment and participation rates

Type of contact	Number	Per cent of approached (*n* = 4,493)	Per cent of contacts established (*n* = 3,761)
Letter sent and phone contact attempted	4,493	100.0	—
No contact	732	16.3	—
No phone number	35	0.8	—
Moved/retired/deceased	254	5.7	—
Unavailable (overseas, maternity leave, etc)	48	1.0	—
No contact after five calls	395	8.8	—
Telephone contact established	3,761	83.7	100.0
Declined to participate	2,512	55.9	66.8
Agreed but withdrew	291	6.5	7.7
Agreed and completed	958	21.3	25.5

3.2 Representativeness of the GP sample

Whenever possible, the study group of GPs should be compared with the population from which the GPs were drawn (the sample frame) to identify and, if necessary, adjust for any sample bias that may affect the findings of the study. Comparisons between the final GP sample and the sample frame are provided below. Weightings generated as a result of these comparisons and applied to the data are described in Section 3.3.

Statistical comparisons, using the chi-square statistic (χ^2) (significant at the 5% level), were made between BEACH participants, and all recognised GPs in the sample frame during the study period (Table 3.2). The GP characteristics data for BEACH participants were drawn from the GP profile questionnaire. DoHA provided the data for all GPs in the sample frame, drawn from Medicare claims data.

Table 3.2 demonstrates that there were no significant differences in GP characteristics between the final sample of BEACH participants and all GPs in the sample frame, in terms of sex, age, state, place of graduation or practice location as classified by the Australian Standard Geographical Classification.

Occasionally, the random sampling process produces a sample that may be slightly disproportionate to the national sample frame, which can then impact on the final representativeness of the BEACH participants. In 2010–11 the sample provided by DoHA and the final BEACH participant sample were both highly representative of the national sample frame (Table 3.3).

Table 3.2: Comparison of BEACH participants and all active recognised GPs in Australia (the sample frame)

	BEACH[a][b]		Australia[a][c]	
Variable	**Number**	**Per cent of GPs (*n* = 958)**	**Number**	**Per cent of GPs (*n* = 19,428)**
Sex (χ^2 = 0.1, *p* = 0.8)				
Males	591	61.7	12,084	62.2
Females	367	38.3	7,344	37.8
Age (χ^2 = 6.9, *p* = 0.08)				
< 35 years	62	6.5	1,330	6.8
35–44 years	159	16.7	3,858	19.9
45–54 years	330	34.7	6,219	32.0
55+ years	401	42.1	8,021	41.3
Missing	6		0	
Place of graduation (χ^2 = 1.8 *p* = 0.2)				
Australia	661	69.2	13,039	67.1
Overseas	294	30.8	6,389	32.9
Missing	3			
State (χ^2 = 12.5, *p* = 0.09)				
New South Wales	339	35.4	6,459	33.2
Victoria	234	24.4	4,870	25.1
Queensland	164	17.1	3,722	19.2
South Australia	76	7.9	1,629	8.4
Western Australia	90	9.4	1,797	9.2
Tasmania	27	2.8	515	2.7
Australian Capital Territory	25	2.6	298	1.5
Northern Territory	3	0.3	138	0.7
ASGC (χ^2 = 4.9, *p* = 0.3)				
Major Cities of Australia	663	69.2	13,966	71.9
Inner Regional Australia	197	20.6	3,599	18.5
Outer Regional Australia	84	8.8	1,526	7.9
Remote Australia	11	1.2	228	1.2
Very Remote Australia	3	0.3	109	0.6
Unknown	0		1	

(a) Missing data removed.

(b) Data drawn from the BEACH GP profile completed by each participating GP.

(c) All GPs who claimed at least 375 MBS GP consultation services during the most recent 3-month Medicare Australia data period. Data provided by the Department of Health and Ageing.

Note: ASGC – Australian Standard Geographical Classification.

Table 3.3: Comparison of all active recognised GPs in Australia (the sample frame), GPs in the sample from Medicare claims data (drawn by DoHA), and BEACH participants 2010–11

	Sample frame (all Australia)[a]		Sample from Medicare claims data[b]		BEACH participants	
Variable	Number	Per cent of GPs	Number	Per cent of GPs	Number	Per cent of GPs
Sex (missing)	(0)		(1)		(0)	
Males	12,084	62.2	2,940	65.4	591	61.7
Females	7,344	37.8	1,552	34.6	367	38.3
Age (missing)	(0)		(1)		(6)	
< 35 years	1,330	6.8	341	7.6	62	6.5
35–44 years	3,858	19.9	908	20.2	159	16.7
45–54 years	6,219	32.0	1,477	32.9	330	34.7
55+ years	8,021	41.3	1,766	39.3	401	42.1
State (missing)	(0)		(0)		(0)	
New South Wales	6,459	33.2	1,490	33.2	339	35.4
Victoria	4,870	25.1	1,186	26.4	234	24.4
Queensland	3,722	19.2	816	18.2	164	17.1
South Australia	1,629	8.4	382	8.5	76	7.9
Western Australia	1,797	9.2	422	9.4	90	9.4
Tasmania	515	2.7	116	2.6	27	2.8
Australian Capital Territory	298	1.5	60	1.3	25	2.6
Northern Territory	138	0.7	21	0.5	3	0.3
Total	**19,428**	**100.0**	**4,493**	**100.0**	**958**	**100.0**

(a) Sample frame – all recognised (see 'Glossary') GPs in Australia who claimed at least 375 general practice service items in the previous quarter (from Medicare claims data).

(b) Random sample of GPs from the sample frame, drawn from Medicare claims data and supplied by DoHA to approach for BEACH participation.

GP activity in the previous quarter

Data on the number of MBS general practice service items claimed in the previous quarter were also provided by DoHA for each GP in the samples drawn, and for all GPs (as a group) in the sample frame. These data were used to determine the 'activity level' of each GP.

There were significant differences in the distribution of BEACH participants and non-participants across activity levels. A greater proportion of participants than non-participants were in the 375–750 services and 750–1,500 services groups, and a smaller proportion in the high activity group (> 1,500 services) (Table 3.4).

Participants had a significantly lower mean number of consultation items claimed in the previous quarter (1,311.9) compared with GPs who declined to participate (1,384.5) (p = 0.008; Table 3.4). Comparisons of the median number of claims for each group showed a difference of fewer than eight consultations per week (7.9), and a difference of 5.6 consultations per week in the mean number.

GP activity in the previous year

When comparing GP activity level in the previous 12 months, there was no significant difference between the proportions of participating and non-participating GPs in each of the claims categories (p = 0.094; Table 3.5). However, comparison of the median and mean number of claims for each group showed a difference in the median of 5.8 consultations per week (based on a difference of 306 per year), and a difference in the mean of 5.5 consultations per week (based on 285 per year).

Table 3.4: Quarterly activity level of participating and non-participating GPs

	Participants[(a)] (n = 958)		Non-participants[(a)] (n = 2,803)	
Variable	**Number of GPs**	**Per cent**	**Number of GPs**	**Per cent**
Activity (χ^2 = 8.3, p = 0.015)				
375–750 services in previous quarter	228	23.8	566	20.2
750–1,500 services in previous quarter	417	43.5	1,198	42.7
> 1,500 services in previous quarter	313	32.7	1,039	37.1
	Number of claims		**Number of claims**	
Mean activity level (t = 2.66, p = 0.008)	1,311.9	—	1,384.5	—
Median activity level	1,136.0	—	1,239.0	—
Standard deviation	719.2	—	732.3	—

(a) Missing data removed.

Table 3.5: Annual activity level of participating and non-participating GPs

	Participants[(a)] (n = 958)		Non-participants[(a)] (n = 2,803)	
Variable	**Number of GPs**	**Per cent**	**Number of GPs**	**Per cent**
Activity (χ^2 = 6.4, p = 0.093)				
1–1,500 services in previous year	39	4.1	91	3.3
1,500–3,000 services in previous year	186	19.4	511	18.2
3,001–6,000 services in previous year	419	43.7	1,163	41.5
> 6,000 services in previous year	314	32.8	1,038	37.0
	Number of claims		**Number of claims**	
Mean activity level (t = 2.57, p = 0.0103)	5,222.6	—	5,507.4	—
Median activity level	4,634.0	—	4,940.0	—
Standard deviation	2,882.0	—	2,933.0	—

(a) Missing data removed.

3.3 Weighting the data

Age–sex weights

As described in Section 3.2, comparisons are made annually to test how representative BEACH participants are of the Australian sample frame. Occasionally, where participants in a particular age or sex group are over-represented or under-represented, GP age–sex weights are applied to the data sets in post-stratification weighting to achieve comparable estimates and precision. The BEACH participants were representative in all age and sex categories, but because there are always marginal (even if not statistically significant) differences, post-stratification weighting was applied for consistency over recording years.

Activity weights

In BEACH, each GP provides details of 100 consecutive encounters. There is considerable variation among GPs in the number of services each provides in a given year. Encounters were therefore assigned an additional weight that was directly proportional to the activity level of the recording GP. GP activity level was measured as the number of MBS general practice service items claimed by the GP in the previous 12 months (data supplied by DoHA).

Total weights

The final weighted estimates were calculated by multiplying raw rates by the GP age–sex weight and the GP sampling fraction of services in the previous 12 months. Table 3.5 shows the precision ratio calculated before and after weighting the encounter data.

3.4 Representativeness of the final encounter sample

BEACH aims to gain a representative sample of GP–patient encounters. To assess the representativeness of the final weighted sample of encounters, the age–sex distribution of patients at weighted BEACH encounters with GP consultation service items claimed (excluding those with Department of Veterans' Affairs (DVA) patients) was compared with that of patients at all encounters claimed as GP consultation service items through Medicare in the 2010–11 study period (data provided by DoHA).

As shown in Table 3.6, there is an excellent fit of the BEACH (weighted) age-sex distribution with that of the MBS claims distribution, with precision ratios all within the 0.91–1.06 range. Even prior to the application of weightings, the range of raw precision ratios (0.86–1.12) indicates that the BEACH sample of encounters is a good representation of Australian GP–patient encounters, as no age–sex category varied by more than 20% (maximum variance 14% in males aged 5–14 years) from the population distribution.

The age–sex distribution of patients at BEACH encounters and for MBS GP consultation service item claims is shown graphically for all patients in Figure 3.1, for males in Figure 3.2, and for females in Figure 3.3.

Table 3.6: Age–sex distribution of patients at BEACH and MBS GP consultation service items

	BEACH–raw[(a)]		BEACH–weighted[(b)]		Australia[(c)]	Precision ratios (Australia = 1.00)	
Sex/age	Number	Per cent (*n* = 79,739)	Number	Per cent (*n* = 79,853)	Per cent (*n* = 100,352,765)	Raw[(a)]	Weighted[(c)]
Male							
< 1 year	876	1.1	850	1.1	1.1	1.00	0.96
1–4 years	2,033	2.6	2,123	2.7	2.8	0.91	0.95
5–14 years	2,255	2.8	2,450	3.1	3.3	0.86	0.93
15–24 years	2,419	3.0	2,676	3.4	3.2	0.95	1.05
25–44 years	6,229	7.8	6,624	8.3	8.7	0.90	0.95
45–64 years	8,822	11.1	9,413	11.8	11.8	0.94	1.00
65–74 years	4,784	6.0	4,998	6.3	5.9	1.02	1.06
75+ years	4,648	5.8	4,678	5.9	5.9	0.99	0.99
Female							
< 1 year	762	1.0	726	0.9	1.0	0.96	0.91
1–4 years	1,806	2.3	1,886	2.4	2.5	0.90	0.94
5–14 years	2,257	2.8	2,342	2.9	3.1	0.91	0.95
15–24 years	4,491	5.6	4,417	5.5	5.5	1.02	1.01
25–44 years	11,816	14.8	11,530	14.4	14.3	1.04	1.01
45–64 years	13,309	16.7	12,646	15.8	15.6	1.07	1.02
65–74 years	6,077	7.6	5,780	7.2	6.8	1.12	1.06
75+ years	7,155	9.0	6,713	8.4	8.6	1.04	0.98

(a) Unweighted GP consultation Medicare service items only, excluding encounters with patients who hold a DVA Repatriation health card.
(b) Calculated from BEACH weighted data, excluding encounters with patients who hold a DVA Repatriation health card.
(c) MBS claims data provided by the Primary Care Division of the Department of Health and Ageing.
Note: GP consultation Medicare services – see 'Glossary'. Only encounters with a valid age and sex are included in the comparison.

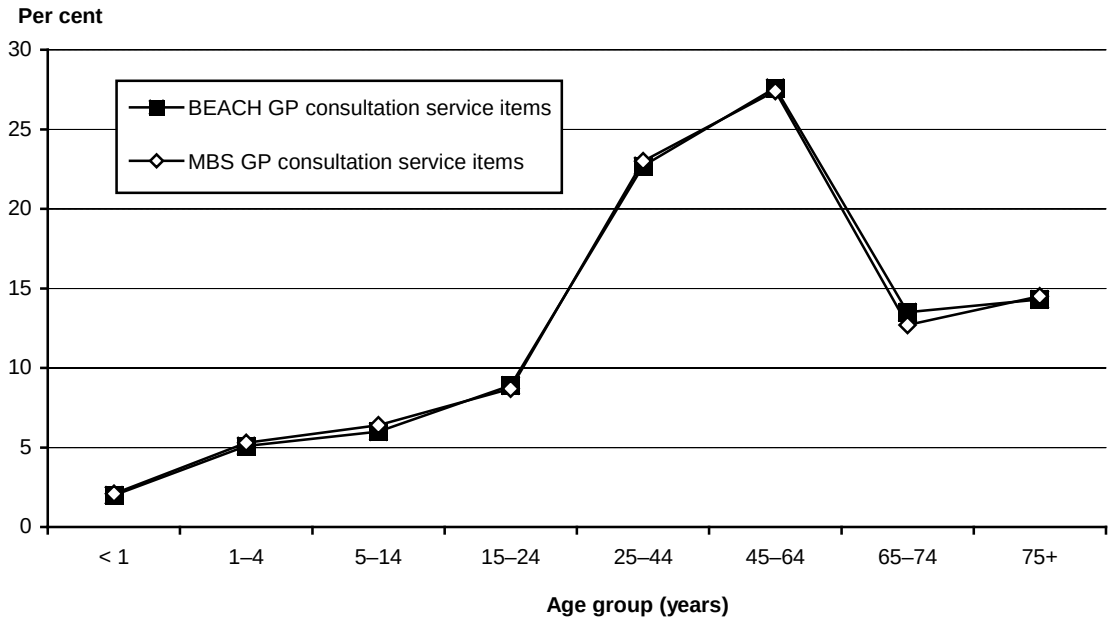


Figure 3.1: Age distribution of all patients at BEACH and MBS GP consultation services 2010–11

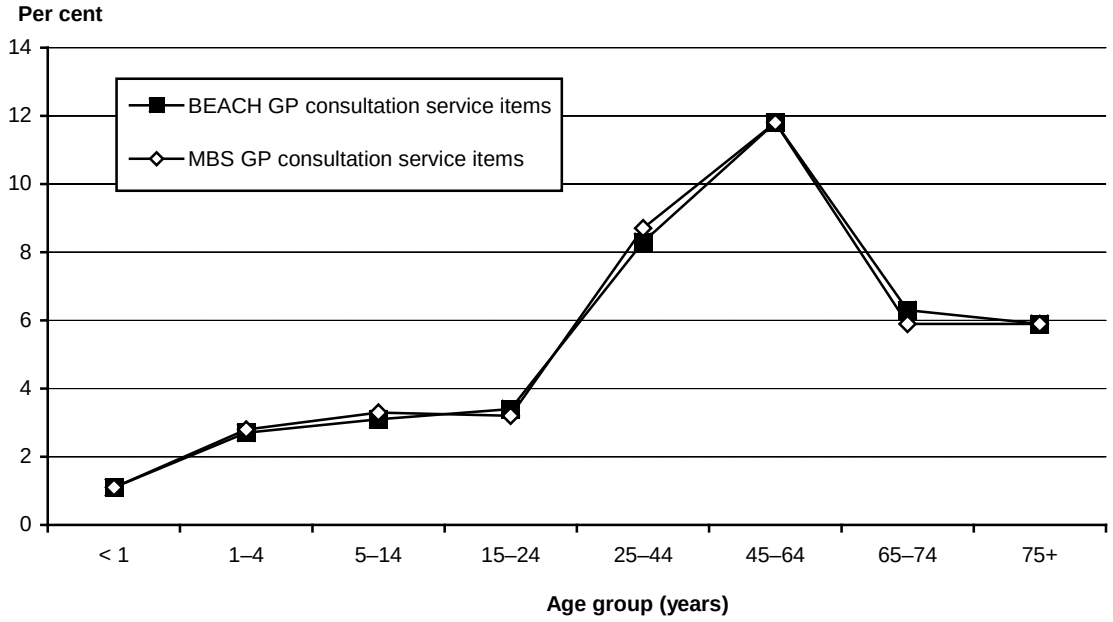


Figure 3.2: Age distribution of male patients at BEACH and MBS GP consultation services 2010–11

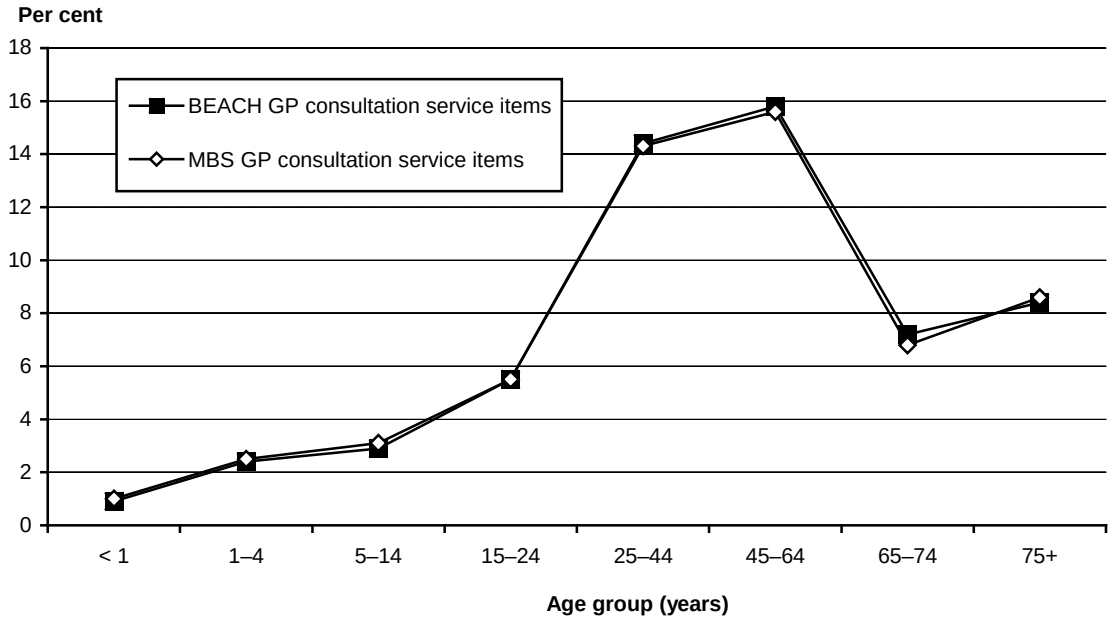


Figure 3.3: Age distribution of female patients at BEACH and MBS GP consultation services 2010–11

3.5 The weighted data set

The final unweighted data set from the 13th year of collection contained encounters, reasons for encounters, problems and management/treatments. The apparent number of encounters and number of medications increased after weighting, and the number of reasons for encounter, problems managed, other treatments, referrals, imaging and pathology all decreased after weighting. Raw and weighted totals for each data element are shown in Table 3.7. The weighted data set is used for all analyses in the remainder of this report.

Table 3.7: The BEACH data set, 2010–11

Variable	Raw	Weighted
General practitioners	958	958.0
Encounters	95,800	95,839.0
Reasons for encounter	149,503	149,005.1
Problems managed	150,909	146,141.1
Medications	100,584	100,816.6
Other treatments[(a)]	56,129	54,279.1
Referrals	51,896	50,235.0
Pathology	14,494	13,526.1
Imaging	9,773	9,369.9
Other investigations	46,827	43,313.0

(a) Other treatments excludes injections for immunisations/vaccinations (raw *n* = 4,233, weighted *n* = 4,044) (see Chapter 10).

4 The participating GPs

This chapter reports data collected between April 2010 and March 2011 about the participating GPs and their practices from the 13th year of the BEACH program. Data on GP and practice characteristics are reported for each year from 2001–02 to 2010–11 in the 10-year summary report *A decade of Australian general practice activity 2001–02 to 2010–11*.[1]

4.1 Characteristics of the GP participants

All participants returned a GP profile questionnaire, although some were incomplete. The results are provided in Table 4.1. Of the 958 participants:

- 62% were male, and 42% were aged 55 years and over
- Nearly two-thirds had been in general practice for more than 20 years
- 69% had graduated in Australia
- 37% spent more than 40 hours each week on direct patient care services (mean hours worked was 38.4; median was 39.0 hours)
- 27% conducted some consultations in a language other than English
- more than 50% were Fellows of the RACGP, and 9% were Fellows of the Australian College of Rural and Remote Medicine (ACRRM)
- 26% bulk-billed Medicare for all patients and 73% bulk-billed for selected patients; only 1% did not bulk bill Medicare for any patient consultations
- 56% had provided care in a residential aged care facility in the previous month
- 69% practised in Major cities (classified using the Australian Standard Geographical Classification)
- 39% were in practices of fewer than five individual GPs, and 22% were in practices of 10 or more individual GPs
- 61% were in practices of fewer than five full-time equivalent GPs
- 81% of the GPs worked in a practice that employed practice nursing staff – for more than half of these, (56.6%) the practice employed less than two full-time equivalents (35–45 hours per week)
- 87% worked in an accredited practice
- more than half (58.2%) had a co-located pathology laboratory or collection centre
- 42.6% worked in a practice that provided their own or cooperative after-hours care, and 52% in a practice that used a deputising service for after-hours patient care (multiple responses allowed)
- 62% worked in a practice teaching undergraduates, junior doctors, registrars, or all three.

Those interested in the clinical activity of overseas trained doctors will find more information in Bayram et al. (2007) *Clinical activity of overseas trained doctors practising in general practice in Australia*.[56] Readers interested in the effects of GP age on clinical practice will find more information in Charles et al. (2006) *The independent effect of age of general practitioner on clinical practice*.[57] For more information about the effect of the sex of the GP on clinical practice see Harrison et al. (2011) *Sex of the GP*.[58]

Table 4.1: Characteristics of participating GPs and their practices

GP characteristic	Number[(a)]	Per cent of GPs[(a)] (*n* = 958)
Sex (missing = 0)		
Male	591	61.7
Female	367	38.3
Age (missing = 6)		
< 35 years	62	6.5
35–44 years	159	16.7
45–54 years	330	34.7
55+ years	401	42.1
Years in general practice (missing = 8)		
< 2 years	9	1.0
2–5 years	81	8.5
6–10 years	94	9.9
11–19 years	155	16.3
20+ years	611	64.3
Place of graduation (missing = 3)		
Australia	661	69.2
Overseas	294	30.8
Asia	116	12.2
United Kingdom	71	7.4
Africa	55	5.8
Europe	28	2.9
New Zealand	13	1.4
Other	11	1.2
Direct patient care hours (worked) per week (missing = 16)		
≤ 10 hours	6	0.6
11–20 hours	82	8.7
21–40 hours	509	54.0
41–60 hours	322	34.2
61+ hours	23	2.4
Consult in languages other than English (missing = 5)		
< 25% of consultations	209	21.9
25–50% of consultations	28	2.9
> 50% of consultations	18	1.9
Currently in general practice training program (missing = 8)	30	3.2
Fellow of RACGP (missing = 4)	497	52.1
Fellow of ACRRM (missing = 24)	85	9.1

(continued)

Table 4.1 (continued): Characteristics of participating GPs and their practices

GP characteristic	Number[a]	Per cent of GPs[a] (*n* = 958)
Bulk-billing[b] (missing = 4)		
All patients	249	26.1
Some patients	695	72.9
No patients	10	1.1
Patient care provided in previous month[b]		
In a residential aged care facility (missing = 4)	531	55.7
As a salaried/sessional hospital medical officer (missing = 8)	112	11.8
Practice location by RRMA (missing = 0)		
Capital	614	64.1
Other metropolitan	58	6.1
Large rural	59	6.2
Small rural	69	7.2
Other rural	142	14.8
Remote central	8	0.8
Other remote, offshore	8	0.8
Practice location by ASGC remoteness structure (missing = 0)		
Major cities	663	69.2
Inner regional	197	20.6
Outer regional	84	8.8
Remote	11	1.2
Very remote	3	0.3
Size of practice – number of individual GPs (missing = 12)		
Solo	102	10.8
2–4	269	28.4
5–9	365	38.6
10–14	140	14.8
15+	70	7.4
Size of practice – full-time equivalent GPs (missing = 28) (unspecified = 12) [d]		
< 1	7	0.8
1.0–1.99	151	16.5
2.0–2.99	135	14.7
3.0–3.99	155	16.9
4.0–4.99	110	12.0
5.0–9.99	272	29.6
10.0–14.99	63	6.9
15+	25	2.7

(continued)

Table 4.1 (continued): Characteristics of participating GPs and their practices

GP characteristic	Number[a]	Per cent of GPs[a] (*n* = 958)
Practice nurse at major practice address (missing = 19)	747	79.6
Number of individual practice nurses (missing = 25)		
0	192	20.6
1	184	19.7
2	191	20.5
3	145	15.5
4–5	156	16.7
6+	65	7.0
Number of full-time equivalent practice nurses (missing = 40; unspecified = 14)[d]		
0	192	21.2
< 1[d]	90	10.0
1.0–1.99	313	34.6
2.0–2.99	188	20.8
3.0–3.99	68	7.5
4.0+	53	5.9
Accredited practice (missing = 10)	828	87.3
Co-located services[c] (missing = 4)		
Pathology laboratory/collection centre	555	58.2
Psychologist	439	46.0
Physiotherapist	331	34.7
Medical specialist	215	22.5
Imaging	168	17.6
After-hours arrangements[b] (missing = 4)		
Practice does own and/or cooperative with other practices	406	42.6
Practice does its own	284	29.8
Cooperative with other practices	136	14.3
Deputising service	497	52.1
Other arrangement	94	9.9
Major practice a teaching practice[b] (missing = 2)	594	62.1
Not a teaching practice	362	37.9
Yes – for undergraduates	507	53.0
Yes – for junior doctors	108	11.3
Yes – for registrars	335	35.0

(a) Missing data removed.

(b) Multiple responses allowed.

(c) Services located/available on the same premises, in the same building or within 50 metres, available on a daily or regular basis.

(d) 12 GPs answered '2' or more to number of individual GPs but '0' to FTE – these were tabulated as 'unspecified' and not included in the denominator as numerators could not be determined; 4 GPs answered '1' to individuals but '0' to FTE – these were included in the '< 1' FTE group. 14 GPs answered '2', or more to individual practice nurse but '0' to FTE - these are tabulated as 'unspecified' and not included in the denominator; 15 GPs answered '1' to individuals but '0' to FTE – these were included in the '< 1' FTE group.

Note: RRMA – Rural, Remote and Metropolitan Areas classification; ASGC – Australian Standard Geographical Classification; RACGP – Royal Australian College of General Practitioners; ACRRM – Australian College of Rural and Remote Medicine.

4.2 Computer use at GP practices

As computers are increasingly being used by GPs in their clinical activity, the GP profile questionnaire was redesigned in 2010–11 so that more comprehensive information could be collected about the uses to which computers are put in a general practice clinical environment (see Appendix 2). In particular, more specific information was collected about pathology and imaging test ordering and receipt of results, and whether the medical records used were paper only, a mix of paper and electronic medical records, or whether the practice was completely paperless in this regard.

Table 4.2 shows the proportion of individual participating GPs who used computers for each of nine listed activities.

- Only 4.4% of GPs did not use a computer at all for clinical purposes.
- Computers were used mainly for prescribing, receiving pathology results electronically and for internet use.
- 93.2% of GPs were producing prescriptions electronically.
- 91.1% were receiving pathology results online, 81.7% were producing and printing pathology orders, and 35.3% were ordering pathology electronically.
- 79.4% were receiving imaging results online, 74.4% were producing and printing imaging orders, and 22.2% were ordering imaging tests electronically.
- Almost two-thirds (64.7) reported they had electronic medical records exclusively (that is, were paperless).
- Over one-quarter (28.8%) reported maintaining a hybrid record where some patient information is kept electronically and some on paper records (for the same patients).

Table 4.2: Computer applications available/used at major practice address

Computer use	Number	Per cent of GPs (*n* = 958)[a]
Not at all	42	4.4
Internet/email only	5	0.5
Prescribing	892	93.2
Internet	811	84.7
Email	662	65.0
Pathology ordering (online)[b]	338	35.3
Produce/print pathology orders[b]	782	81.7
Pathology results receipt (on line)[b]	872	91.1
Imaging ordering (online)[b]	212	22.2
Produce/print imaging orders[b]	712	74.4
Imaging results receipt (on line)[b]	760	79.4
Medical records – complete (paperless)	619	64.7
Partial/hybrid records	276	28.8
Paper records only	63	6.6

(a) Missing data removed (*n* = 1).

(b) Multiple responses allowed.

Further information about reported individual GP use of computers at the practice can be found in Henderson et al. (2006) *Extent and utilisation of computerisation in Australian general practice*.[59] Those interested in the effect of computerisation on quality of care in general practice will find more detailed information in Henderson (2007) *The effect of computerisation on the quality of care in Australian general practice*.[60]

4.3 Changes in characteristics of the GPs over the decade 2001–02 to 2010–11

Changes over the decade 2001–02 to 2010–11 are described in detail in the accompanying report *A decade of Australian general practice activity 2001–02 to 2010–11*.[1] Briefly, the major changes in the characteristics of the participating GP were:

- the proportion of GP participants who were female increased over time
- the proportion of GPs who were younger than 44 years decreased, whereas the proportion aged 45 years or more increased over the decade
- reflecting the increase in the age of GP participants, the proportion who had worked in general practice for more than 20 years also increased significantly over time
- the proportion of GPs who graduated from their primary medical degree in Australia decreased over the decade
- the proportion of GPs who provide < 25% of their consultations in a language other than English increased
- the proportion of participants holding the Fellowship of the RACGP increased over the decade
- fewer practices are providing after-hours care on their own, or in cooperation with other practices, but more practices are using deputising services for after-hours care
- computers have become increasingly available at practices, and their use for clinical activity also continues to increase.

5 The encounters

This chapter describes the content and type of encounters recorded in the 2010–11 BEACH year. Data about the encounters are also reported for each year from 2001–02 to 2010–11 in the 10-year report *A decade of Australian general practice activity 2001–02 to 2010–11*.[1]

5.1 Content of the encounters

In 2010–11, details of 95,839 encounters (weighted data) were available for 958 GPs. A summary of these encounters is provided as Table 5.1. Reasons for encounter (RFEs) and problems managed are expressed as rates per 100 encounters. Each management action is presented in terms of both a rate per 100 encounters and a rate per 100 problems managed, with 95% confidence limits.

- On average, patients gave 156 RFEs, and GPs managed about 153 problems per 100 encounters.
- Chronic problems accounted for 34.8% of all problems managed, being managed at a rate of 53 chronic problems per 100 encounters.
- New problems accounted for 38% of all problems, being managed at a rate of 57.8 per 100 encounters.
- Work-related problems were managed at a rate of 2.5 per 100 encounters.
- Medications were the most common treatment choice, generated at a rate of 69.0 per 100 problems managed. Most of these medications were prescribed (55.8 per 100 problems), rather than supplied by the GP (6.8 per 100) or advised for over-the-counter purchase (6.4 per 100).
- Clinical treatments (such as advice and counselling) were provided at a rate of 23 per 100 problems, and procedures undertaken at a rate of 11 per 100 problems.
- For every 100 problems managed there were 9 referrals for care to other providers, most often to medical specialists (6 referrals per 100 problems), and less often to allied health services (3 referrals per 100 problems).
- On average GPs ordered 30 pathology tests/batteries of tests and 6 imaging tests in the management of every 100 problems (Table 5.1).

Table 5.1: Summary of morbidity and management

Variable	Number	Rate per 100 encounters (*n* = 95,839)	95% LCL	95% UCL	Rate per 100 problems (*n* = 146,141)	95% LCL	95% UCL
General practitioners	958	—	—	—	—	—	—
Encounters	95,839	—	—	—	—	—	—
Reasons for encounter	149,005	155.5	153.5	157.5	—	—	—
Problems managed	146,141	152.5	150.2	154.7	—	—	—
New problems	55,410	57.8	56.4	59.3	37.9	36.9	38.9
Chronic problems	50,911	53.1	51.2	55.0	34.8	33.9	35.8
Work-related	2,393	2.5	2.3	2.7	1.6	1.5	1.8
Medications	100,817	105.2	102.8	107.6	69.0	67.6	70.3
Prescribed	81,542	85.1	82.9	87.3	55.8	54.5	57.1
GP-supplied	9,903	10.3	9.5	11.2	6.8	6.2	7.3
Advised OTC	9,371	9.8	9.0	10.5	6.4	5.9	6.9
Other treatments	50,235	52.4	49.8	55.1	34.4	32.7	36.0
Clinical*	34,019	35.5	33.2	37.8	23.3	21.8	24.8
Procedural*	16,216	16.9	16.1	17.8	11.1	10.6	11.6
Referrals	13,526	14.1	13.5	14.7	9.3	8.9	9.6
Medical specialist*	8,248	8.6	8.2	9.0	5.6	5.4	5.9
Allied health services*	4,039	4.2	3.9	4.5	2.8	2.6	2.9
Hospital*	364	0.4	0.3	0.4	0.2	0.2	0.3
Emergency department*	291	0.3	0.3	0.4	0.2	0.2	0.2
Other referrals*	584	0.6	0.5	0.7	0.4	0.3	0.5
Pathology	43,313	45.2	43.4	47.0	29.6	28.6	30.7
Imaging	9,370	9.8	9.4	10.2	6.4	6.1	6.7
Other investigations	697	0.7	0.7	0.8	0.5	0.4	0.5

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, <purl.library.usyd.edu.au/sup/9781920899868>).

Note: LCL – lower confidence limit; UCL – upper confidence limit; OTC – over-the-counter.

5.2 Encounter type

During the first 7 years of the BEACH program, where one (or more) MBS/DVA item number was claimable for the encounter, GP participants were instructed to record only one item number. Where multiple item numbers (for example, an A1 item such as 'standard surgery consultation' and a procedural item number) were claimable for an encounter, GPs were instructed to record the lower of the item numbers (usually an A1 item number).

Changes to the BEACH form were made in the 2005–06 BEACH year to capture practice nurse activity associated with GP–patient consultations. One of these changes was to allow GPs to record up to three Medicare item numbers per encounter.

For comparability with earlier years, in Tables 5.3, 5.4 and 5.5 only one item number per Medicare/DVA-claimable encounter was counted. Selection of one item number was undertaken on a priority basis: consultation item numbers override incentive item numbers, which override procedural item numbers, which override other Medicare item numbers. Table 5.6 provides a breakdown of all item numbers recorded by the GPs. Chapter 13 gives a more specific description for each of the practice nurse Medicare item numbers recorded.

Table 5.2 provides an overview of the MBS/DVA item numbers recorded in BEACH in 2010–11. At least one MBS/DVA item number was recorded at 83,976 encounters (87.6% of all BEACH encounters). A single item number was recorded at three-quarters (76.8%) of BEACH encounters said to be claimable from the MBS/DVA.

Table 5.2: Overview of MBS items recorded

Variable	Number	Per cent of MBS/DVA encounters (*n* = 83,976)
Encounters at which one MBS item was recorded	64,514	76.8
Encounters at which two MBS items were recorded	18,210	21.7
Encounters at which three MBS items were recorded	1,252	1.5
Total encounters at which at least one item was recorded	**83,976**	**100.0**

Note: MBS – Medicare Benefits Schedule; DVA – Department of Veterans' Affairs.

In previous years we have reported the breakdown of MBS/DVA services into groups for GPs and practice nurses in Table 5.3. The MBS has continued to expand, with some services provided by Aboriginal health workers and other allied health services (e.g. physiotherapists and speech pathologists) claimable through the MBS. In addition, some items can be claimed by combinations of these health professionals, for example practice nurses or Aboriginal health workers. To account for these changes, we have modified Table 5.3 to group MBS/DVA items according to whether the service was provided by a GP or an 'other health professional'. The group for other health professionals includes practice nurses, Aboriginal health workers and allied health services.

Of the 83,976 MBS/DVA items of service recorded (counting only one item number per encounter), 95.4% of encounters related to GP items of service. Items with other health professionals not accompanied by a GP item of service were recorded at 0.1% of encounters. Direct encounters are defined as those where the patient was physically seen by the GP. At indirect encounters, the patient was not physically seen by the GP.

More detail about item numbers recorded for practice nurse services is given in Chapter 13.

Table 5.3: Breakdown of MBS/DVA items of service according to provider (counting one item number per encounter)

Type of encounter	Number	Per cent of encounters[a] (*n* = 87,953)	95% LCL	95% UCL
MBS/DVA GP item of service	83,903	95.4	95.0	95.8
MBS/DVA item of service with other health professional[b] (no related GP item)	73	0.1	0.0	0.1
Direct encounters	29	0.0	0.0	0.1
Indirect encounters	37	0.0	0.0	0.1
Unspecified as direct or indirect	7	0.0	0.0	0.0
MBS/DVA item of service (all encounters)[b]	**83,976**	**95.5**	**95.1**	**95.9**

(a) Missing data removed from analysis (*n* = 7,886).

(b) 'Other health professional' includes practice nurses, allied health services and Aboriginal health workers.

(c) Includes direct encounters at which either a GP or a practice nurse item was recorded.

Note: LCL – lower confidence limit; UCL – upper confidence limit; MBS – Medicare Benefits Schedule; DVA – Department of Veterans' Affairs.

Table 5.4 reports the breakdown of encounter type by payment source, counting a single Medicare item number per encounter (where applicable).

- Indirect encounters (where the patient was not seen by the GP) accounted for 1.5%, and direct encounters for 98.5% of encounters at which a payment source was recorded.
- The vast majority of all direct encounters (95.4%) were claimable either through Medicare or the DVA.
- Direct encounters where the GP indicated that no charge was made occurred rarely, accounting for 0.4% of encounters.
- Encounters claimable through workers compensation accounted for 1.9% of encounters.
- Encounters claimable through other sources (e.g. hospital-paid encounters) accounted for 0.8% of encounters.

Table 5.4: Type of encounter at which a source of payment was recorded for the encounter (counting one item number per encounter)

Type of encounter	Number	Per cent of encounters[a] (*n* = 87,953)	95% LCL	95% UCL	Per cent of direct encounters (*n* = 86,652)
Indirect encounters[b]	1,295	1.5	1.2	1.7	—
Direct encounters	86,652	98.5	98.3	98.8	100.0
MBS/DVA items of service (direct encounters only)[c]	83,920	95.4	95.0	95.8	96.8
Workers compensation	1,703	1.9	1.8	2.1	2.0
Other paid (hospital, state, etc)	659	0.8	0.6	0.9	0.8
No charge	370	0.4	0.3	0.5	0.4
Other health professional only items (unspecified as direct or indirect)	7	0.0	0.0	0.0	—
Total	**87,953**	**100.0**	**—**	**—**	**—**

(a) Missing data removed from analysis (*n* = 7,886).

(b) Twelve encounters involving chronic disease management or case conference items were recorded as indirect encounters.

(c) Includes direct encounters at which either a GP or an item with an other health professional (or both) was recorded.

Note: LCL – lower confidence limit; UCL – upper confidence limit; MBS – Medicare Benefits Schedule; DVA – Department of Veterans' Affairs.

Table 5.5 provides a summary of the MBS items recorded in BEACH, counting one item number per encounter. This provides comparable data about item numbers recorded to those reported in previous years.

- Standard surgery consultations accounted for 83% of MBS/DVA-claimable GP consultations, and for 79% of all encounters for which a payment source was recorded.
- 8% of MBS/DVA claimable encounters were long or prolonged surgery consultations.
- Home or institution visits, and visits at residential aged care facilities were all relatively rare, together accounting for 2.6% of MBS/DVA claimable encounters.
- About 1% of encounters were claimable as GP mental health care items, with another 1% of items claimed as chronic disease management items. Health assessments and case conference items were not recorded often.

Table 5.5: Summary of GP only MBS/DVA items recorded (counting one item number per encounter)

MBS/DVA item	Number	Rate per 100 encounters[(a)] (*n* = 95,839)	95% LCL	95% UCL	Per cent of Medicare-paid GP items (*n* = 83,903)
Short surgery consultations	1,910	2.2	1.9	2.5	2.3
Standard surgery consultations	69,299	78.8	77.7	79.8	82.6
Long surgery consultations	6,545	7.4	6.9	8.0	7.8
Prolonged surgery consultations	410	0.5	0.4	0.6	0.5
Home or institution visits (excluding RACF)	990	1.1	0.8	1.5	1.2
Residential aged care facility (RACF)	1,292	1.5	1.1	1.8	1.5
Health assessments	309	0.4	0.3	0.4	0.4
Chronic disease management items	871	1.0	0.9	1.1	1.0
Case conferences	3	0.0	0.0	0.0	0.0
GP mental health care	1,022	1.2	1.0	1.3	1.2
Attendances associated with practice incentive payments	150	0.2	0.1	0.2	0.2
Other items	1,102	1.3	1.0	1.5	1.3
Surgical operations	281	0.3	0.2	0.4	0.3
Therapeutic procedures	447	0.5	0.4	0.6	0.5
Acupuncture	85	0.1	0.0	0.2	0.1
Other items	289	0.3	0.2	0.5	0.3
Total MBS/DVA items of service (GPs only)	**83,903**	**95.4**	**95.0**	**95.8**	**100.0**

(a) Encounters with missing payment source were removed from analysis (*n* = 7,886). Denominator used for analysis = 95,839.

Note: LCL – lower confidence limit; UCL – upper confidence limit; MBS – Medicare Benefits Schedule; DVA – Department of Veterans' Affairs; GP – general practitioner; RACF – residential aged care facility.

Table 5.6 provides the distribution of all Medicare item numbers recorded across Medicare item number groups. Overall, there were 104,691 MBS item numbers recorded at 83,976 Medicare/DVA claimable encounters in 2010–11. This equated to an average of 1.2 items recorded at each encounter claimable through Medicare/DVA.

Surgery consultations (including short, standard, long and prolonged) were the most commonly recorded type of item number, at 93% of the encounters where at least one item was recorded. They accounted for 75% of all MBS items recorded in BEACH.

The second most commonly recorded were items for bulk-billed incentive payments, which accounted for 14% of all items recorded. Items for hospital, residential aged care and home visits together accounted for 2% of all MBS items. Items with practice nurses, Aboriginal health workers or allied health services accounted for 3% of all MBS items, and were recorded at 3.7% of encounters at which at least one MBS item was recorded. For a more detailed breakdown of practice nurse item numbers, and related data on practice nurse activity, refer to Chapter 13.

Table 5.6: Distribution of all Medicare item numbers across item number groups

	All MBS items[(a)] (*n* = 104,691)		At least one item recorded[(b)] (*n* = 83,976)			
Items/encounters	**Number**	**Per cent**	**Number**	**Per cent**	**95% LCL**	**95% UCL**
Surgery consultations	78,163	74.7	78,163	93.1	92.4	93.8
Home, institution and residential aged care visits	2,283	2.2	2,283	2.7	2.1	3.3
Health assessments	379	0.4	378	0.5	0.4	0.5
Chronic disease management items (including case conferences)	1,559	1.5	1,124	1.3	1.2	1.5
Attendances associated with practice incentive payments	179	0.2	179	0.2	0.2	0.3
Acupuncture	85	0.1	85	0.1	0.0	0.2
Bulk-billed incentive payment	15,014	14.3	15,014	17.9	15.9	19.8
Practice nurse/Aboriginal health worker/allied health worker services	3,110	3.0	3,068	3.7	3.2	4.1
Diagnostic procedures and investigations	506	0.5	498	0.6	0.5	0.7
Therapeutic procedures	594	0.6	582	0.7	0.5	0.9
Surgical operations	1,043	1.0	1,017	1.2	1.1	1.4
Diagnostic imaging services	22	0.0	21	0.0	0.0	0.1
Pathology services	214	0.2	203	0.2	0.2	0.3
GP mental health care items	1,226	1.2	1,226	1.5	1.3	1.6
Other items	311	0.3	311	0.4	0.2	0.5
Total items	**104,691**	**100.0**	**83,976**	**—**	**—**	**—**

(a) Up to three MBS items could be recorded at each encounter.

(b) Identifies encounters where at least one item from a MBS group was recorded.

Note: LCL – lower confidence limit; UCL – upper confidence limit; MBS – Medicare Benefits Schedule.

5.3 Consultation length

In a subsample of 32,257 BEACH encounters containing start and finish times for all MBS/DVA-claimable encounters, the mean length of consultation in 2010–11 was 15.0 minutes (95% CI: 14.8–15.3). The median length was 13.0 minutes (results not tabled).

For A1 MBS/DVA-claimable encounters, the mean length of consultation in 2010–11 was 14.7 minutes (95% CI: 14.4–15.0), and the median length was 13.0 minutes (results not tabled). Methods describing the substudy from which data on consultation length are collected are described in Section 2.6.

The determinants of consultation length were investigated by Britt et al. (2004) in *Determinants of GP billing in Australia: content and time*[61] and Britt et al. (2005) in *Determinants of consultation length in Australian general practice*.[62]

5.4 Changes in the encounters over the decade 2001–02 to 2010–11

The companion report *A decade of Australian general practice activity 2001–02 to 2010–11*,[1] provides an overview of changes in general practice encounters over the last decade. The major changes between 2001–02 and 2010–11 are summarised below.

- There was an increase in the average number of problems managed at encounter, from 144 per 100 encounters in 2001–02 to 153 in 2001–11. This change was reflected in an increase in the number of chronic problems managed per 100 encounters.
- The number of work-related problems managed marginally decreased over the decade from 3.0 to 2.5 per 100 encounters.

Of the encounters claimable from Medicare/DVA:

- short surgery consultations as a proportion of all Medicare/DVA claimed consultations increased over the study period
- the proportion designated chronic disease management items or health assessments both increased significantly.

The changes in management actions described below are measured in terms of rates per 100 encounters. As there was a significant increase in the number of problems managed at encounters, it may be more informative to consider changes in management actions in terms of rates per 100 problems managed as described in Section 8.1.

- The number of medications supplied direct to the patient by the GP significantly increased from 7.6 to 10.3 per 100 encounters, there was no significant change in the number prescribed or advised for over-the-counter purchase.
- The number of procedures undertaken per 100 encounters rose significantly from 13.8 to 16.9 per 100 encounters.
- There was an increased rate of referrals, which was reflected in increases in referrals to medical specialists, allied health services, emergency departments and 'other' referrals.
- Pathology test/battery order rates increased by nearly 50%. Orders for imaging tests also increased.

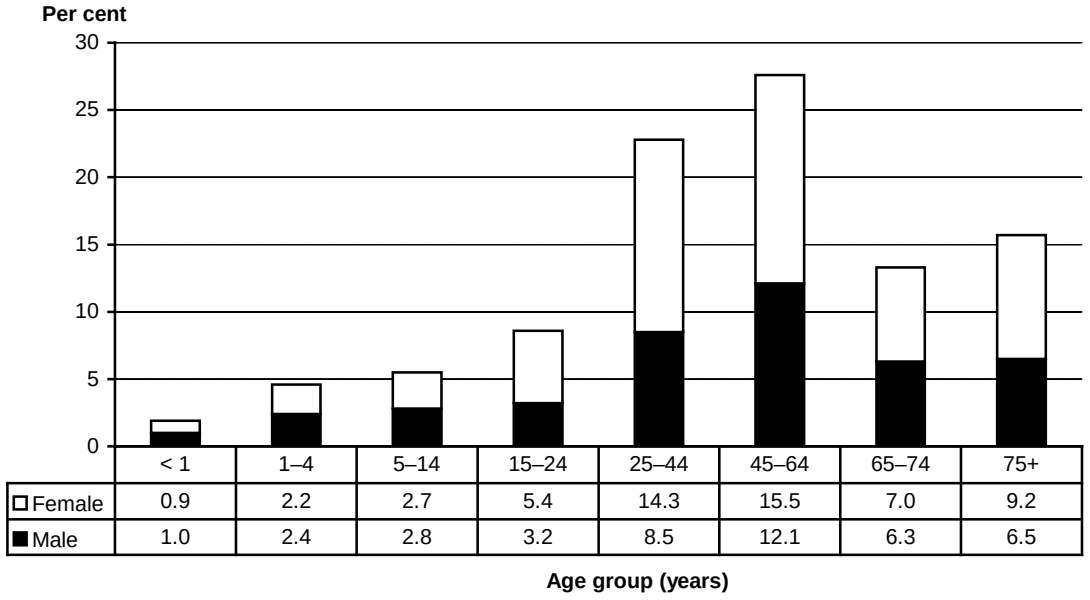
6 The patients

This chapter reports data collected between April 2010 and March 2011 about the characteristics of patients at GP encounters and their reasons for encounter, from the 13th year of the BEACH program. Data on patient characteristics and reasons for encounter are reported for each year from 2001–02 to 2010–11 in the 10-year summary report *A decade of Australian general practice activity 2001–02 to 2010–11*.[1]

6.1 Age–sex distribution of patients at encounter

The age–sex distribution of patients at the 95,839 encounters is shown in Figure 6.1. Females accounted for the greater proportion (57.1%) of encounters (Table 6.1). This was reflected across all age groups except for children aged less than 15 years (Figure 6.1).

Patients aged less than 25 years accounted for 20.6% of encounters; those aged 25–44 years for 22.8%; those aged 45–64 years accounted for 27.7% and those aged 65 years and over for 29.0% of encounters (Table 6.1).



	< 1	1–4	5–14	15–24	25–44	45–64	65–74	75+
Female	0.9	2.2	2.7	5.4	14.3	15.5	7.0	9.2
Male	1.0	2.4	2.8	3.2	8.5	12.1	6.3	6.5

Note: Missing data removed. The distributions will not agree perfectly with those in Table 6.1 because of missing data in either age or sex fields.

Figure 6.1: Age–sex distribution of patients at encounter

The relationship between patient age, patient general practice attendance rates and the age distribution of the Australian population was reported in *General practice activity in Australia, health priorities and policies 1998 to 2008*.[63]

6.2 Other patient characteristics

Table 6.1 summarises other characteristics of the patients at GP encounters. In summary:

- the patient was new to the practice at 7.3% of encounters
- nearly half of the encounters were with patients who held a Commonwealth concession card (44.9%) and/or a Repatriation health card (2.5%)
- at 10.7 % of encounters the patient was from a non-English-speaking background
- at 1.2% of encounters the patient identified themselves as an Aboriginal or Torres Strait Islander person.

Table 6.1: Characteristics of the patients at encounters

Patient characteristics	Number	Per cent of encounters (*n* = 95,839)	95% LCL	95% UCL
Sex (missing)[(a)]	(888)	—	—	—
Males	40,717	42.9	42.0	43.7
Females	54,234	57.1	56.3	58.0
Age group (missing)[(a)]	(771)	—	—	—
< 1 year	1,757	1.8	1.7	2.0
1–4 years	4,348	4.6	4.3	4.9
5–14 years	5,240	5.5	5.2	5.8
15–24 years	8,247	8.7	8.3	9.1
25–44 years	21,654	22.8	22.0	23.5
45–64 years	26,298	27.7	27.1	28.2
65–74 years	12,608	13.3	12.7	13.8
75+ years	14,915	15.7	14.8	16.6
New patient to practice (missing)[(a)]	(1,298)	—	—	—
New patient to practice	6,871	7.3	6.6	7.9
Patient seen previously	87,670	92.7	92.1	93.4
Commonwealth concession card status (missing)[(a)]	(7,570)	—	—	—
Has a Commonwealth concession card	39,618	44.9	43.3	46.4
No Commonwealth concession card	48,650	55.1	53.6	56.7
Repatriation health card status (missing)[(a)]	(9,187)	—	—	—
Has a repatriation health card	2,170	2.5	2.3	2.7
No repatriation health card	84,482	97.5	97.3	97.7
Language status (missing)[(a)]	(9,153)	—	—	—
Non-English-speaking background [(b)]	9,244	10.7	8.9	12.5
English-speaking background	77,442	89.3	87.5	91.1
Indigenous status (missing)[(a)]	(9,218)	—	—	—
Aboriginal and/or Torres Strait Islander [(C)]	1,042	1.2	0.9	1.5
Non-Indigenous	85,578	98.8	98.5	99.1

(a) Missing data removed.

(b) Speaks a language other than English as their primary language at home

(c) Self identified

Note: LCL – lower confidence limit; UCL – upper confidence limit.

6.3 Patient reasons for encounter

International interest in reasons for encounter (RFEs) has developed over the past three decades. RFEs reflect the patient's demand for care and can provide an indication of service use patterns, which may benefit from intervention on a population level.[64]

RFEs are those concerns and expectations that patients bring to the GP. Participating GPs were asked to record at least one and up to three patient RFEs in words as close as possible to those used by the patient, before the diagnostic or management process had begun. These reflect the patient's view of their reasons for consulting the GP. RFEs can be expressed in terms of one or more symptoms (for example, 'itchy eyes', 'chest pain'), in diagnostic terms (for example, 'about my diabetes', 'for my hypertension'), a request for a service ('I need more scripts', 'I want a referral'), an expressed fear of disease or a need for a check-up.

Patient RFEs can have a one-to-one, one-to-many, many-to-one or many-to-many relationship to problems managed. That is, the patient may describe a single RFE that relates to a single problem managed at the encounter, one RFE that relates to multiple problems, multiple RFEs that relate to a single problem managed, or multiple RFEs that relate to multiple problems managed at the encounter.

Number of reasons for encounter

There were 149,005 RFEs recorded at 95,839 encounters in 2010–11. At 57.6% of encounters only one RFE was recorded, at 29.4% of encounters two RFEs were recorded and at 13.0% of encounters three RFEs were recorded (Table 6.2). Patients presented on average with 155.5 RFEs per 100 encounters, or about one and a half RFEs per encounter (Table 6.3).

Table 6.2: Number of patient reasons for encounter

Number of RFEs at encounter	Number of encounters (*n* = 95,839)	Per cent of encounters	95% LCL	95% UCL
One RFE	55,173	57.6	56.3	58.8
Two RFEs	28,166	29.4	28.7	30.1
Three RFEs	12,500	13.0	12.3	13.8
Total	**95,839**	**100.0**	**—**	**—**

Note: RFEs – reasons for encounter; LCL – lower confidence limit; UCL – upper confidence limit.

Reasons for encounter by ICPC-2 component

The distribution of patient RFEs by ICPC-2 component is presented in Table 6.3, expressed as a percentage of all RFEs and as a rate per 100 encounters with 95% confidence limits. In the 'diagnosis, disease' group we provide data about infections, injuries, neoplasms, congenital anomalies and 'other' diagnoses.

Over four out of ten (43.0%) patient RFEs were expressed in terms of symptoms or complaints (for example, 'tired', 'fever'). RFEs were described in diagnostic terms for 19.9% of RFEs (for example, 'about my diabetes', 'for my depression'). The remaining 37.2% of RFEs were described in terms of processes of care, such as requests for a health check, to renew scripts, to get a referral, to find out test results or to get a medical certificate.

Table 6.3: Patient reasons for encounter by ICPC-2 component

ICPC-2 component	Number	Per cent of total RFEs (*n* = 149,005)	Rate per 100 encounters (*n* = 95,839)	95% LCL	95% UCL
Symptoms and complaints	64,036	43.0	66.8	64.7	68.9
Diagnosis, diseases	29,606	19.9	30.9	29.4	32.4
Infections	7,438	5.0	7.8	7.3	8.3
Injuries	4,252	2.9	4.4	4.2	4.7
Neoplasms	1,059	0.7	1.1	1.0	1.2
Congenital anomalies	234	0.2	0.2	0.2	0.3
Other diagnoses, diseases	16,622	11.2	17.3	16.3	18.4
Diagnostic and preventive procedures	24,101	16.2	25.1	24.1	26.2
Medications, treatments and therapeutics	13,901	9.3	14.5	13.8	15.2
Results	7,678	5.2	8.0	7.5	8.5
Referrals and other RFEs	7,198	4.8	7.5	7.1	7.9
Administrative	2,487	1.7	2.6	2.4	2.8
Total RFEs	**149,005**	**100.0**	**155.5**	**153.5**	**157.5**

Note: RFEs – reasons for encounter; LCL – lower confidence limit; UCL – upper confidence limit.

Reasons for encounter by ICPC-2 chapter

The distribution of patient RFEs by ICPC-2 chapter and the most common RFEs within each chapter are presented in Table 6.4. Each chapter and individual RFE is expressed as a percentage of all RFEs and as a rate per 100 encounters with 95% confidence limits.

RFEs of a general and unspecified nature were presented at a rate of 41.0 per 100 encounters, with requests for prescriptions and test results most frequently recorded. RFEs related to the respiratory system arose at a rate of 21.7 per 100 encounters, while those related to the musculoskeletal system were recorded at a rate of 15.3 per 100 encounters, and those relating to skin at a rate of 15.3 per 100 encounters (Table 6.4).

Most frequent patient reasons for encounter

The 30 most commonly recorded RFEs (Table 6.5), accounted for more than half of all RFEs. In this analysis the specific ICPC-2 chapter to which an across-chapter concept belongs is disregarded, so that, for example, 'check-up – all' includes all check-ups from all body systems, irrespective of whether or not the body system was specified.

Of the top 30 most common RFEs, the majority were descriptive of symptoms such as cough, throat complaint, back complaint and rash. However, four of the top five RFEs reflected requests for a process of care (that is, requests for check-up, prescription, test result and immunisation), and together accounted for a quarter of all RFEs (24.8%) (Table 6.5).

Table 6.4: Patient reasons for encounter by ICPC-2 chapter and most frequent individual reasons for encounter within chapter

Reasons for encounter	Number	Per cent of total RFEs[a] (*n* = 149,005)	Rate per 100 encounters[b] (*n* = 95,839)	95% LCL	95% UCL
General and unspecified	**39,310**	**26.4**	**41.0**	**39.8**	**42.3**
Prescription NOS	8,188	5.5	8.5	8.0	9.1
Results tests/procedures NOS	6,441	4.3	6.7	6.3	7.1
General check-up*	4,109	2.8	4.3	4.0	4.6
Immunisation/vaccination NOS	2,258	1.5	2.4	2.1	2.6
Administrative procedure NOS	2,254	1.5	2.4	2.2	2.5
Fever	1,956	1.3	2.0	1.8	2.3
Weakness/tiredness	1,291	0.9	1.3	1.2	1.5
Observation/health education/advice/diet NOS	1,082	0.7	1.1	0.9	1.4
Other referrals NEC	1,067	0.7	1.1	1.0	1.2
Blood test NOS	1,038	0.7	1.1	0.9	1.2
Other reason for encounter NEC	944	0.6	1.0	0.8	1.1
Chest pain NOS	891	0.6	0.9	0.9	1.0
Trauma/injury NOS	786	0.5	0.8	0.7	0.9
Follow-up encounter unspecified	755	0.5	0.8	0.7	0.9
Respiratory	**20,840**	**14.0**	**21.7**	**20.9**	**22.6**
Cough	6,445	4.3	6.7	6.3	7.1
Throat symptom/complaint	2,960	2.0	3.1	2.8	3.4
Immunisation/vaccination – respiratory	2,212	1.5	2.3	2.0	2.7
Upper respiratory tract infection	1,963	1.3	2.0	1.8	2.3
Sneezing/nasal congestion	1,360	0.9	1.4	1.2	1.7
Asthma	765	0.5	0.8	0.7	0.9
Shortness of breath/dyspnoea	757	0.5	0.8	0.7	0.9
Musculoskeletal	**14,678**	**9.9**	**15.3**	**14.9**	**15.8**
Back complaint*	3,017	2.0	3.1	3.0	3.3
Knee symptom/complaint	1,267	0.9	1.3	1.2	1.4
Shoulder symptom/complaint	1,104	0.7	1.2	1.1	1.2
Foot/toe symptom/complaint	1,011	0.7	1.1	1.0	1.1
Leg/thigh symptom/complaint	861	0.6	0.9	0.8	1.0
Neck symptom/complaint	808	0.5	0.8	0.8	0.9
Skin	**14,676**	**9.8**	**15.3**	**14.8**	**15.8**
Rash*	2,604	1.7	2.7	2.5	2.9
Skin symptom/complaint, other	1,463	1.0	1.5	1.4	1.7
Swelling (skin)*	1,083	0.7	1.1	1.0	1.2
Skin check-up*	1,005	0.7	1.0	0.9	1.2
Laceration/cut	734	0.5	0.8	0.7	0.8

(continued)

Table 6.4 (continued): Patient reasons for encounter by ICPC-2 chapter and most frequent individual reasons for encounter within chapter

Reasons for encounter	Number	Per cent of total RFEs[(a)] (*n* = 149,005)	Rate per 100 encounters (*n* = 95,839)	95% LCL	95% UCL
Cardiovascular	**10,086**	**6.8**	**10.5**	**10.0**	**11.1**
Cardiac check-up*	4,471	3.0	4.7	4.3	5.1
Hypertension/high blood pressure*	1,850	1.2	1.9	1.7	2.2
Prescription – cardiovascular	756	0.5	0.8	0.6	0.9
Digestive	**9,791**	**6.6**	**10.2**	**9.8**	**10.6**
Abdominal pain*	1,742	1.2	1.8	1.7	1.9
Diarrhoea	1,135	0.8	1.2	1.1	1.3
Vomiting	830	0.6	0.9	0.8	1.0
Psychological	**8,634**	**5.8**	**9.0**	**8.6**	**9.4**
Depression*	2,121	1.4	2.2	2.1	2.4
Anxiety*	1,160	0.8	1.2	1.1	1.3
Sleep disturbance	1,064	0.7	1.1	1.0	1.2
Endocrine and metabolic	**6,273**	**4.2**	**6.5**	**6.2**	**6.9**
Diabetes (non-gestational)*	1,359	0.9	1.4	1.3	1.6
Prescription – endocrine/metabolic	959	0.6	1.0	0.9	1.1
Female genital system	**4,775**	**3.2**	**5.0**	**4.6**	**5.3**
Female genital check-up/Pap smear*	1,679	1.1	1.8	1.6	1.9
Neurological	**4,448**	**3.0**	**4.6**	**4.4**	**4.9**
Headache	1,383	0.9	1.4	1.3	1.6
Vertigo/dizziness	1,099	0.7	1.1	1.1	1.2
Ear	3,567	2.4	3.7	3.5	3.9
Ear pain	1,391	0.9	1.5	1.3	1.6
Pregnancy and family planning	**3,270**	**2.2**	**3.4**	**3.1**	**3.7**
Pre/post natal check-up*	842	0.6	0.9	0.7	1.0
Oral contraception*	688	0.5	0.7	0.6	0.8
Urology	**2,616**	**1.8**	**2.7**	**2.6**	**2.9**
Eye	**2,332**	**1.6**	**2.4**	**2.3**	**2.6**
Blood and blood forming organs	**1,541**	**1.0**	**1.6**	**1.4**	**1.8**
Blood test – blood and blood forming organs	951	0.6	1.0	0.8	1.1
Male genital system	**1,201**	**0.8**	**1.3**	**1.2**	**1.3**
Social	**968**	**0.6**	**1.0**	**0.9**	**1.1**
Total RFEs	**149,005**	**100.0**	**155.5**	**153.5**	**157.5**

(a) Only individual RFEs accounting for >= 0.5% of total RFEs are included.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.1 <purl.library.usyd.edu.au/sup/9781920899868>).

Note: RFEs – reasons for encounter; LCL – lower confidence limit; UCL – upper confidence limit; NEC – not elsewhere classified.

Table 6.5: Most frequent patient reasons for encounter

Patient reason for encounter	Number	Per cent of total RFEs (*n* = 149,005)	Rate per 100 encounters (*n* = 95,839)	95% LCL	95% UCL
Check-up – all*	13,090	8.8	13.7	13.0	14.3
Prescription – all*	11,528	7.7	12.0	11.4	12.7
Test results*	7,678	5.2	8.0	7.5	8.5
Cough	6,445	4.3	6.7	6.3	7.1
Immunisation/vaccination – all*	4,646	3.1	4.8	4.4	5.3
Back complaint*	3,017	2.0	3.1	3.0	3.3
Throat symptom/complaint	2,960	2.0	3.1	2.8	3.4
Rash*	2,604	1.7	2.7	2.5	2.9
Administrative procedure – all*	2,487	1.7	2.6	2.4	2.8
Blood test – all*	2,483	1.7	2.6	2.4	2.8
Depression*	2,121	1.4	2.2	2.1	2.4
Upper respiratory tract infection	1,963	1.3	2.0	1.8	2.3
Fever	1,956	1.3	2.0	1.8	2.3
Hypertension/high blood pressure*	1,850	1.2	1.9	1.7	2.2
Observation/health education/advice/diet – all*	1,764	1.2	1.8	1.5	2.1
Abdominal pain*	1,742	1.2	1.8	1.7	1.9
Skin symptom/complaint, other	1,463	1.0	1.5	1.4	1.7
Ear pain/earache	1,391	0.9	1.5	1.3	1.6
Headache	1,383	0.9	1.4	1.3	1.6
Diabetes – all*	1,371	0.9	1.4	1.3	1.6
Sneezing/nasal congestion	1,360	0.9	1.4	1.2	1.7
Weakness/tiredness	1,291	0.9	1.3	1.2	1.5
Knee symptom/complaint	1,267	0.9	1.3	1.2	1.4
Anxiety*	1,160	0.8	1.2	1.1	1.3
Diarrhoea	1,135	0.8	1.2	1.1	1.3
Shoulder symptom/complaint	1,104	0.7	1.2	1.1	1.2
Vertigo/dizziness	1,099	0.7	1.1	1.1	1.2
Swelling (skin)*	1,083	0.7	1.1	1.0	1.2
Other referrals NEC	1,067	0.7	1.1	1.0	1.2
Sleep disturbance	1,043	0.7	1.1	1.0	1.2
Subtotal	*85,553*	*57.4*	—	—	—
Total RFEs	**149,005**	**100.0**	**155.5**	**153.5**	**157.5**

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.1, <purl.library.usyd.edu.au/sup/9781920899868>).

Note: RFEs – reasons for encounter; LCL – lower confidence limit; UCL – upper confidence limit; NOS – not otherwise specified; NEC – not elsewhere classified.

6.4 Changes in patients and reasons for encounter over the decade 2001–02 to 2010–11

An overview of changes in the characteristics of patients at encounters and their reasons for encounter over the decade 2001–02 to 2010–11 can be found in Chapter 11 of the companion report *A decade of Australian general practice activity 2001–02 to 2010–11*.[1]

Major changes identified between 2001–02 and 2010–11 are summarised below.

Between 2001–02 and 2010–11, the proportion of encounters with patients aged less than 45 years decreased from 48.6% to 43.4%, while the proportion with patients aged 45 years and over increased from 51.4% to 56.6%. When extrapolated, with the increased number of encounters nationally, the number of encounters with younger patients only increased by about 2.7 million over the decade, while the number of encounters with older patients increased by about 15.5 million nationally.

Over the decade there was a significant decrease in the proportion of encounters with patients who were new to the practice (from 9.2% in 2001–02 to 7.3% in 2010–11). The proportion of encounters with patients holding a Commonwealth concession card was relatively stable across the decade. Between 2003–04 and 2010–11, the proportion of encounters with patients holding a repatriation health card decrease by about a third (from 3.7% in 2001–02 to 2.5% in 2010–11).

There was a significant increase in the number of RFEs per 100 encounters across the decade, from 149.2 in 2001–02 to 155.5 in 2010–11. Fewer patients were giving single RFEs and more were giving two or three RFEs. This increase in RFEs is probably related to the increasing proportion of encounters with older people, who are more likely to visit for multiple chronic disease management. There was a significant decrease in the rate of RFEs described as symptoms and complaints, and increases in rates of patient presentations for medications, administrative procedures, tests and test results. The increase in patients' requests for tests and test results ties in with the increased use of pathology testing over the decade (discussed in Chapter 12).

7 Problems managed

A 'problem managed' is a formal statement of the provider's understanding of a health problem presented by the patient, family or community, and can be described in terms of a disease, symptom or complaint, social problem or ill-defined condition managed at the encounter. As GPs were instructed to record each problem at the most specific level possible from the information available, the problem managed may at times be limited to the level of a presenting symptom.

At each patient encounter, up to four problems could be recorded by the GP. A minimum of one problem was compulsory. The status of each problem to the patient – new (first presentation to a medical practitioner) or old (follow-up of previous problem) – was also indicated. The concept of a principal diagnosis, which is often used in hospital statistics, is not adopted in studies of general practice where multiple problem management is the norm rather than the exception. Further, the range of problems managed at the encounter often crosses multiple body systems and may include undiagnosed symptoms, psychosocial problems or chronic disease, which makes the designation of a principal diagnosis difficult. Thus, the order in which the problems were recorded by the GP is not significant. All problems managed in general practice are included in this section, including those that involved management by a practice nurse at the recorded encounter. Problems that included management by a practice nurse are reported specifically in Chapter 13.

There are two ways to describe the relative frequency of problems managed: as a percentage of all problems managed in the study, or as a rate at which problems are managed per 100 encounters. Where groups of problems are reported (for example, cardiovascular problems) it must be remembered that more than one of that type of problem (such as hypertension and heart failure) may have been managed at a single encounter. In considering these results, the reader must be mindful that although a rate per 100 encounters for a single ungrouped problem (for example, asthma, 2.2 per 100 encounters) can be regarded as equivalent to 'asthma is managed at 2.2% of encounters', such a statement cannot be made for grouped concepts (ICPC-2 chapters and those marked with asterisks in the tables).

Data on problems managed in Australian general practice from the BEACH study are reported for each year from 2001–02 to 2010–11 in the 10-year summary report *A decade of Australian general practice activity 2001–02 to 2010–11*.[1]

7.1 Number of problems managed at encounter

There were 146,141 problems managed, at a rate of 152.5 per 100 encounters in 2010–11 (Table 5.1). Table 7.1 shows the number of problems managed at each encounter. Only one problem was managed at more than 60% of encounters, two problems were managed at 25% of encounters, and 9% involved the management of three problems. The management of four problems at an encounter was less common (3% of encounters).

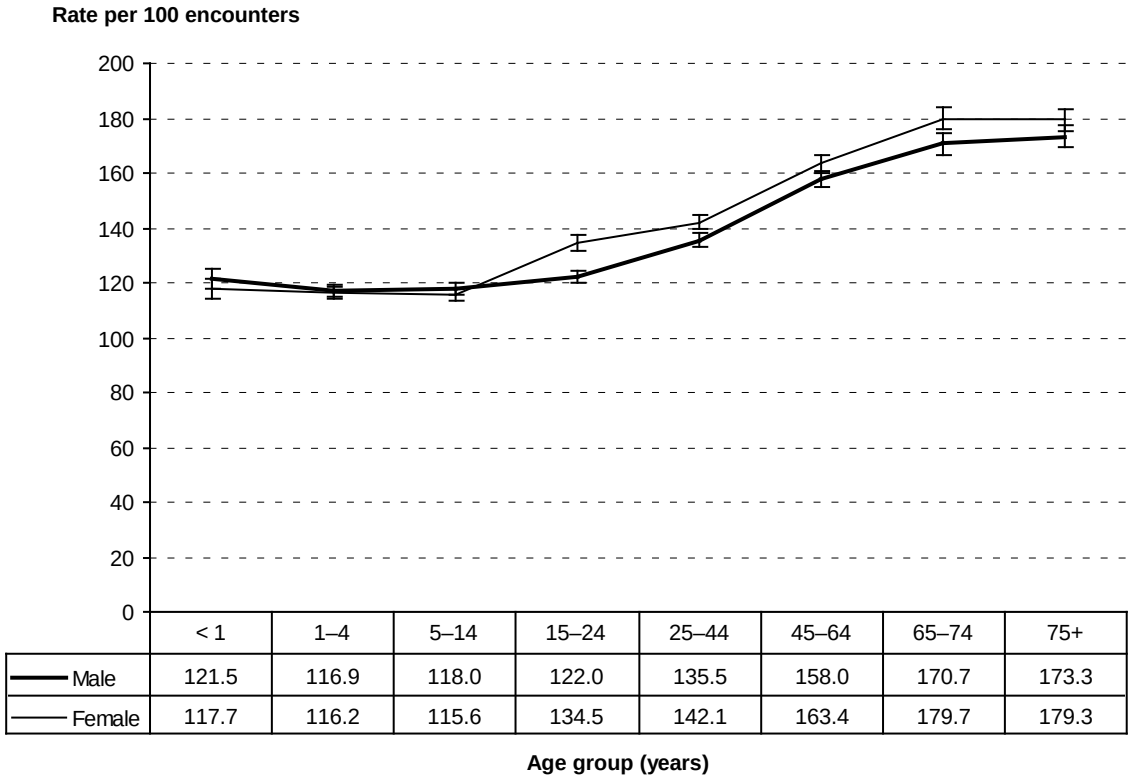
Table 7.1: Number of problems managed at an encounter

Number of problems managed at encounter	Number of encounters	Per cent	95% LCL	95% UCL
One problem	59,948	62.6	61.2	63.9
Two problems	24,299	25.4	24.6	26.1
Three problems	8,772	9.2	8.6	9.7
Four problems	2,820	2.9	2.6	3.3
Total	**95,839**	**100.0**	**—**	**—**

Note: LCL – lower confidence limit; UCL – upper confidence limit.

Figure 7.1 shows the age–sex-specific rates of problems managed. The number of problems managed at encounter increased steadily with the age of the patient.

Significantly more problems were managed overall at encounters with female patients (155.1 per 100 encounters, 95% CI: 152.7–157.5) than at those with male patients (149.2 per 100 encounters, 95% CI: 146.8–151.5) (results not tabled). Figure 7.1 demonstrates that this difference was particularly evident in the 15–24 year age group.



Note: Data with patient age or sex missing were removed

Figure 7.1: Age–sex-specific rates of problems managed per 100 encounters with 95% CI

7.2 Problems managed by ICPC-2 component

Problems managed in general practice may also be examined using the components of the ICPC-2 classification to provide a more thorough understanding of the types of problems managed during general practice encounters. Table 7.2 lists the distribution of problems managed by ICPC-2 component.

In the BEACH program, participating GPs are instructed to record the problem being managed at the encounter at the highest diagnostic level possible using the currently available evidence. As such, two-thirds of problems were expressed as diagnoses or diseases (66.3%), with the majority of other problems described as symptoms or complaints (18.5%), or as diagnostic or preventive procedures (9.9%) such as check-ups. However, in some situations, rather than providing clinical details about the problem under management, a 'process' was recorded: that is, the problem was described in such terms as a 'prescription', 'test result', referral, or an administrative procedure (Table 7.2).

Table 7.2: Problems managed by ICPC-2 component

ICPC-2 component	Number	Per cent of total problems (*n* = 146,141)	Rate per 100 encounters (*n* = 95,839)	95% LCL	95% UCL
Diagnosis, diseases	96,864	66.3	101.1	99.2	103.0
Infections	23,796	16.3	24.8	24.1	25.6
Injuries	6,785	4.6	7.1	6.8	7.3
Neoplasms	4,154	2.8	4.3	4.1	4.6
Congenital anomalies	625	0.4	0.7	0.6	0.7
Other diagnoses	61,505	42.1	64.2	62.2	66.1
Symptoms and complaints	27,036	18.5	28.2	27.4	29.1
Diagnostic and preventive procedures	14,501	9.9	15.1	14.3	15.9
Medications, treatments and therapeutics	3,578	2.5	3.7	3.4	4.1
Results	1,830	1.3	1.9	1.7	2.1
Referrals and other RFEs	1,243	0.9	1.3	1.1	1.5
Administrative	1,089	0.8	1.1	1.0	1.3
Total problems	**146,141**	**100.0**	**152.5**	**150.2**	**154.7**

Note: LCL – lower confidence limit; UCL – upper confidence limit; RFE – reason for encounter.

7.3 Problems managed by ICPC-2 chapter

The frequency and the distribution of problems managed, by ICPC-2 chapter, are presented in Table 7.3. Rates per 100 encounters and the proportion of total problems are provided at the ICPC-2 chapter level, and for frequent individual problems within each chapter. Only those individual problems accounting for at least 0.5% of all problems managed are listed in the table, in decreasing order of frequency.

The most common problems managed were:

- those classified to the respiratory system (20.4 per 100 encounters) – in particular upper respiratory tract infection, respiratory immunisations, acute bronchitis and asthma

- problems of a general and unspecified nature (19.2 per 100 encounters) – such as general check-ups, and general immunisations and unspecified prescriptions
- skin problems (16.8 per 100 encounters) – such as contact dermatitis and solar keratosis
- cardiovascular problems (16.7 per 100 encounters) – such as hypertension and atrial fibrillation
- musculoskeletal problems (16.6 per 100 encounters) – particularly arthritis and back complaints (Table 7.3).

Table 7.3: Problems managed by ICPC-2 chapter and most frequent individual problems within chapter

Problem managed	Number	Per cent total problems (*n* = 146,141)	Rate per 100 encounters[(a)] (*n* = 95,839)	95% LCL	95% UCL
Respiratory	**19,569**	**13.4**	**20.4**	**19.7**	**21.1**
Upper respiratory tract infection	5,212	3.6	5.4	5.1	5.8
Immunisation/vaccination – respiratory	2,672	1.8	2.8	2.4	3.2
Acute bronchitis/bronchiolitis	2,421	1.7	2.5	2.3	2.7
Asthma	2,075	1.4	2.2	2.0	2.3
Sinusitis	1,273	0.9	1.3	1.2	1.4
Tonsillitis*	1,006	0.7	1.0	0.9	1.2
Chronic obstructive pulmonary disease	875	0.6	0.9	0.8	1.0
General and unspecified	**18,440**	**12.6**	**19.2**	**18.5**	**20.0**
General check-up*	2,572	1.8	2.7	2.5	2.9
Immunisation/vaccination NOS	2,350	1.6	2.5	2.2	2.7
Prescription NOS	1,741	1.2	1.8	1.6	2.1
Results tests/procedures NOS	1,356	0.9	1.4	1.2	1.6
Viral disease, other/NOS	1,139	0.8	1.2	1.0	1.4
Administrative procedure NOS	996	0.7	1.0	0.9	1.2
Abnormal result/investigation NOS	880	0.6	0.9	0.8	1.0
Observation/health education/advice/diet NOS	676	0.5	0.7	0.5	0.9
Skin	**16,052**	**11.0**	**16.8**	**16.2**	**17.2**
Contact dermatitis	1,632	1.1	1.7	1.6	1.8
Solar keratosis/sunburn	1,090	0.7	1.1	1.0	1.3
Malignant neoplasm skin	1,060	0.7	1.1	1.0	1.2
Laceration/cut	903	0.6	0.9	0.9	1.0
Skin disease, other	721	0.5	0.8	0.7	0.8
Cardiovascular	**15,957**	**10.9**	**16.7**	**15.9**	**17.4**
Hypertension*	8,314	5.7	8.7	8.2	9.2
Atrial fibrillation/flutter	1,250	0.9	1.3	1.2	1.4
Ischaemic heart disease*	1,095	0.7	1.1	1.0	1.3
Cardiac check-up*	1,075	0.7	1.1	1.0	1.3

(continued)

Table 7.3 (continued): Problems managed by ICPC-2 chapter and most frequent individual problems within chapter

Problem managed	Number	Per cent total problems (*n* = 146,141)	Rate per 100 encounters[(a)] (*n* = 95,839)	95% LCL	95% UCL
Musculoskeletal	**15,926**	**10.9**	**16.6**	**16.1**	**17.1**
Arthritis – all*	3,492	2.4	3.6	3.4	3.9
Osteoarthritis*	2,590	1.8	2.7	2.5	2.9
Back complaint*	2,599	1.8	2.7	2.5	2.9
Sprain/strain*	1,335	0.9	1.4	1.3	1.5
Bursitis/tendonitis/synovitis NOS	1,019	0.7	1.1	1.0	1.1
Fracture*	892	0.6	0.9	0.9	1.0
Injury musculoskeletal NOS	721	0.5	0.8	0.7	0.8
Osteoporosis	690	0.5	0.7	0.6	0.8
Endocrine and metabolic	**12,243**	**8.4**	**12.8**	**12.2**	**13.3**
Diabetes – non-gestational*	3,800	2.6	4.0	3.7	4.2
Lipid disorders	2,931	2.0	3.1	2.8	3.3
Vitamin/nutritional deficiency	1,216	0.8	1.3	1.1	1.4
Obesity (BMI > 30)	761	0.5	0.8	0.6	1.0
Hypothyroidism/myxoedema	717	0.5	0.7	0.7	0.8
Psychological	**11,843**	**8.1**	**12.4**	**11.9**	**12.9**
Depression*	4,023	2.8	4.2	4.0	4.4
Anxiety*	1,849	1.3	1.9	1.8	2.1
Sleep disturbance	1,443	1.0	1.5	1.4	1.6
Tobacco abuse	889	0.6	0.9	0.8	1.0
Digestive	**10,195**	**7.0**	**10.6**	**10.3**	**10.9**
Oesophageal disease	2,205	1.5	2.3	2.1	2.5
Gastroenteritis*	1,360	0.9	1.4	1.3	1.5
Female genital system	**5,304**	**3.6**	**5.5**	**5.2**	**5.9**
Female genital check-up/Pap smear*	1,645	1.1	1.7	1.5	1.9
Menopausal complaint	666	0.5	0.7	0.6	0.8
Pregnancy and family planning	**3,774**	**2.6**	**3.9**	**3.6**	**4.2**
Pregnancy*	1,377	0.9	1.4	1.3	1.6
Oral contraception*	1,051	0.7	1.1	1.0	1.2
Ear	**3,724**	**2.6**	**3.9**	**3.7**	**4.1**
Acute otitis media/myringitis	1,033	0.7	1.1	1.0	1.2
Excessive ear wax	762	0.5	0.8	0.7	0.9
Neurological	**3,575**	**2.5**	**3.7**	**3.6**	**3.9**
Urology	**3,103**	**2.1**	**3.2**	**3.1**	**3.4**
Urinary tract infection*	1,730	1.2	1.8	1.7	1.9

(continued)

Table 7.3 (continued): Problems managed by ICPC-2 chapter and most frequent individual problems within chapter

Problem managed	Number	Per cent total problems (*n* = 146,141)	Rate per 100 encounters[(a)] (*n* = 95,839)	95% LCL	95% UCL
Eye	2,398	1.6	2.5	2.4	2.6
Male genital system	1,779	1.2	1.9	1.7	2.0
Blood and blood forming organs	1,510	1.0	1.6	1.5	1.7
Social	749	0.5	0.8	0.7	0.9
Total problems	**146,141**	**100.0**	**152.5**	**150.2**	**154.7**

(a) Only those individual problems accounting for≥ 0.5% of total problems are included in the table.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.1 <purl.library.usyd.edu.au/sup/9781920899868>).

Note: LCL – lower confidence limit; UCL – upper confidence limit; NOS – not otherwise specified; BMI – body mass index.

7.4 Most frequently managed problems

Table 7.4 shows the most frequently managed individual problems in general practice, in decreasing order of frequency. These 30 problems accounted for half of all problems managed, and the top 10 problems accounted for 30%.

In this analysis, the specific chapter to which 'across chapter concepts' (for example, check-ups, immunisation/vaccination and prescriptions) apply is ignored, and the concept is grouped with all similar concepts regardless of body system. For example, immunisation/ vaccination includes vaccinations for influenza, childhood diseases, and hepatitis.

The most common problems managed were hypertension (8.7 per 100 encounters), check-ups (6.4 per 100), immunisation/vaccination (5.5 per 100), upper respiratory tract infection (URTI) (5.4 per 100), and depression (4.2 per 100) (Table 7.4).

The far right-hand column in Table 7.4 lists the percentage of each problem that was new to the patient. The problem is considered new if it is a new problem or a new episode of a recurrent problem, and the patient has not been treated for that problem or episode by any medical practitioner before. This can provide a measure of general practice incidence. For example, only 5.2% of all contacts with diabetes were new diagnoses. In contrast, more than three-quarters of URTI problems were new to the patient, suggesting that the majority of people attend the GP for URTI only once per episode.

Table 7.4: Most frequently managed problems

Problem managed	Number	Per cent of total problems (*n* = 146,141)	Rate per 100 encounters (*n* = 95,839)	95% LCL	95% UCL	Per cent of new problems[(a)]
Hypertension*	8,314	5.7	8.7	8.2	9.2	5.2
Check-up – all*	6,144	4.2	6.4	6.1	6.8	41.5
Immunisation/vaccination – all*	5,288	3.6	5.5	5.0	6.0	54.1
Upper respiratory tract infection	5,212	3.6	5.4	5.1	5.8	76.2
Depression*	4,023	2.8	4.2	4.0	4.4	15.4
Diabetes – all*	3,826	2.6	4.0	3.7	4.2	5.2
Arthritis – all*	3,492	2.4	3.6	3.4	3.9	18.9
Lipid disorders	2,931	2.0	3.1	2.8	3.3	9.7
Back complaint*	2,599	1.8	2.7	2.5	2.9	23.5
Acute bronchitis/bronchiolitis	2,421	1.7	2.5	2.3	2.7	73.1
Prescription – all*	2,400	1.6	2.5	2.2	2.8	4.9
Oesophageal disease	2,205	1.5	2.3	2.1	2.5	17.8
Asthma	2,075	1.4	2.2	2.0	2.3	19.6
Anxiety*	1,849	1.3	1.9	1.8	2.1	21.1
Test results*	1,830	1.3	1.9	1.7	2.1	25.6
Urinary tract infection*	1,730	1.2	1.8	1.7	1.9	61.3
Contact dermatitis	1,632	1.1	1.7	1.6	1.8	44.1
Sleep disturbance	1,443	1.0	1.5	1.4	1.6	21.1
Pregnancy*	1,377	0.9	1.4	1.3	1.6	37.4
Gastroenteritis*	1,360	0.9	1.4	1.3	1.5	79.3
Sprain/strain*	1,335	0.9	1.4	1.3	1.5	64.3
Sinusitis acute/chronic	1,273	0.9	1.3	1.2	1.4	64.9
Atrial fibrillation/flutter	1,250	0.9	1.3	1.2	1.4	6.0
Vitamin/nutritional deficiency	1,216	0.8	1.3	1.1	1.4	31.8
Viral disease, other/NOS	1,139	0.8	1.2	1.0	1.4	75.1
Ischaemic heart disease*	1,095	0.7	1.1	1.0	1.3	10.7
Solar keratosis/sunburn	1,090	0.7	1.1	1.0	1.3	47.5
Administrative procedure – all*	1,089	0.7	1.1	1.0	1.3	43.4
Abnormal test results*	1,067	0.7	1.1	1.0	1.2	48.2
Malignant neoplasm skin	1,060	0.7	1.1	1.0	1.2	51.8
Subtotal	*73,765*	*50.5*	—	—	—	—
Total problems	**146,141**	**100.0**	**152.5**	**150.2**	**154.7**	**37.9**

(a) The proportion of problems of this type that were new problems (the first presentation of a problem, including the first presentation of a recurrence of a previously resolved problem, but excluding the presentation of a problem previously assessed by another provider).

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.1 <purl.library.usyd.edu.au/sup/9781920899868>).

Note: LCL – lower confidence limit; UCL – upper confidence limit; NOS – not otherwise specified.

7.5 Most common new problems

For each problem managed, participating GPs are asked to indicate whether the problem under management is a new problem for the patient. The problem is considered new if it is a new problem or a new episode of a recurrent problem, and the patient has not been treated for that problem or episode by any medical practitioner before. Table 7.5 lists the most common new problems managed in general practice, in decreasing order of frequency. Overall, 55,410 problems (37.9% of all problems) were specified as being new, being managed at a rate of 57.8 per 100 encounters.

The most common new problems managed were largely acute and included upper respiratory tract infections (4.1 per 100 encounters), immunisations/vaccinations (3.0), check-ups (2.7), acute bronchitis (1.8) and gastroenteritis (1.1) (Table 7.5).

The far right-hand column of this table shows the new cases of this problem as a proportion of total contacts with this problem. This provides an idea of the incidence of each problem. For example, the 618 new cases of depression represented only 15% of all GP contacts with diagnosed depression, suggesting that by far the majority of contacts for depression were for ongoing management. In contrast, four out of five gastroenteritis cases were first consultations to a medical practitioner for this episode of gastroenteritis, the balance (21%) being follow-up consultations for this episode of this problem. This indicates that most patients only require one visit to a GP for the management of an episode of gastroenteritis.

Table 7.5: Most frequently managed new problems

New problem managed	Number	Per cent of total new problems (*n* = 55,410)	Rate per 100 encounters (*n* = 95,839)	95% LCL	95% UCL	Per cent of this problem[(a)]
Upper respiratory tract infection	3,973	7.2	4.1	3.8	4.5	76.2
Immunisation/vaccination – all*	2,858	5.2	3.0	2.7	3.3	54.1
Check-up – all*	2,550	4.6	2.7	2.4	2.9	41.5
Acute bronchitis/bronchiolitis	1,769	3.2	1.8	1.7	2.0	73.1
Gastroenteritis*	1,079	1.9	1.1	1.0	1.2	79.3
Urinary tract infection*	1,061	1.9	1.1	1.0	1.2	61.3
Sprain/strain*	859	1.5	0.9	0.8	1.0	64.3
Viral disease, other/NOS	855	1.5	0.9	0.7	1.0	75.1
Sinusitis acute/chronic	826	1.5	0.9	0.8	1.0	64.9
Acute otitis media/myringitis	739	1.3	0.8	0.7	0.9	71.5
Tonsillitis*	721	1.3	0.8	0.7	0.8	71.7
Contact dermatitis	720	1.3	0.8	0.7	0.8	44.1
Arthritis – all*	661	1.2	0.7	0.6	0.8	18.9
Depression*	618	1.1	0.6	0.6	0.7	15.4
Bursitis/tendonitis/synovitis NOS	617	1.1	0.6	0.6	0.7	60.5
Back complaint*	610	1.1	0.6	0.6	0.7	23.5
Malignant neoplasm skin	549	1.0	0.6	0.5	0.6	52.0
Solar keratosis/sunburn	517	0.9	0.5	0.5	0.6	47.5
Pregnancy*	515	0.9	0.5	0.5	0.6	37.4

(continued)

Table 7.5 (continued): Most frequently managed new problems

New problem managed	Number	Per cent of total new problems (*n* = 55,410)	Rate per 100 encounters (*n* = 95,839)	95% LCL	95% UCL	Per cent of this problem[(a)]
Abnormal test results*	514	0.9	0.5	0.5	0.6	48.2
Conjunctivitis, infectious	487	0.9	0.5	0.4	0.6	75.3
Excessive ear wax	477	0.9	0.5	0.4	0.6	62.5
Administrative procedure – all*	469	0.8	0.5	0.4	0.6	25.6
Test results*	442	0.8	0.5	0.4	0.5	68.9
Observation/health education/ advice/diet – all*	436	0.8	0.5	0.4	0.5	5.2
Otitis externa	431	0.8	0.4	0.4	0.5	43.3
Hypertension*	410	0.7	0.4	0.4	0.5	46.0
Fracture*	408	0.7	0.4	0.4	0.5	19.6
Asthma	407	0.7	0.4	0.4	0.5	67.5
Skin infection, post traumatic	405	0.7	0.4	0.4	0.5	44.9
Subtotal	*27,074*	*48.6*	—	—	—	—
Total new problems	**55,410**	**100.0**	**57.8**	**56.4**	**59.3**	**—**

(a) The proportion of total contacts with this problem that were accounted for by new problems.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.1 <purl.library.usyd.edu.au/sup/9781920899868>).

Note: LCL – lower confidence limit; UCL – upper confidence limit; NOS – not otherwise specified.

7.6 Most frequently managed chronic problems

To identify chronic conditions, a list classified according to ICPC-2, based on work undertaken by O'Halloran et al. in 2004[35] and regularly updated by O'Halloran (see 'Chronic conditions' grouper G84 <www.fmrc.org.au/icpc2plus/demonstrator.htm>), was applied to the BEACH data set. More than one-third (34.8%) of the problems managed in general practice were chronic. At least one chronic problem was managed at 40.6% of encounters (95% CI: 39.5–41.7), and chronic problems were managed at an average rate of 53.1 per 100 encounters.

In other parts of this chapter, both chronic and non-chronic conditions (for example, diabetes and gestational diabetes) may have been grouped together when reporting (for example, diabetes – all*, Table 7.4). In this section, only problems regarded as chronic have been included in the analysis. For this reason, the condition labels and figures in this analysis may differ from those in Table 7.4. Where the group used for the chronic analysis differs from that used in other analyses in this report, they are marked with a double asterisk. Codes included in the chronic group can be found in Appendix 4, Table A4.2.

Table 7.6 shows the most frequently managed chronic problems in decreasing order of frequency. These 30 chronic problems together accounted for 79.5% of all chronic problems managed, and for 27.7% of all problems managed. The top six chronic problems made up almost half of all chronic problems managed: non-gestational hypertension (16.3% of chronic conditions), depressive disorder (7.8%), non-gestational diabetes (7.5%), chronic arthritis (7.0%), lipid disorders (5.8%), and oesophageal disease (4.3%) (Table 7.6).

Table 7.6: Most frequently managed chronic problems

Chronic problem managed	Number	Per cent of total chronic problems (*n* = 50,911)	Rate per 100 encounters (*n* = 95,839)	95% LCL	95% UCL
Hypertension (non-gestational)**	8,294	16.3	8.7	8.2	9.1
Depressive disorder**	3,985	7.8	4.2	3.9	4.4
Diabetes (non-gestational)**	3,800	7.5	4.0	3.7	4.2
Chronic arthritis**	3,540	7.0	3.7	3.5	3.9
Lipid disorders*	2,931	5.8	3.1	2.8	3.3
Oesophageal disease	2,205	4.3	2.3	2.1	2.5
Asthma	2,075	4.1	2.2	2.0	2.3
Atrial fibrillation/flutter	1,250	2.5	1.3	1.2	1.4
Ischaemic heart disease**	1,095	2.2	1.1	1.0	1.3
Malignant neoplasm of skin	1,060	2.1	1.1	1.0	1.2
Chronic obstructive pulmonary disease	875	1.7	0.9	0.8	1.0
Back syndrome with radiating pain**	859	1.7	0.9	0.8	1.0
Obesity (BMI > 30)	761	1.5	0.8	0.6	1.0
Hypothyroidism/myxoedema	717	1.4	0.7	0.7	0.8
Osteoporosis	690	1.4	0.7	0.6	0.8
Migraine	579	1.1	0.6	0.5	0.7
Heart failure	579	1.1	0.6	0.5	0.7
Chronic skin ulcer	549	1.1	0.6	0.5	0.6
Gout	516	1.0	0.5	0.5	0.6
Shoulder syndrome (excluding arthritis)**	504	1.0	0.5	0.5	0.6
Dementia (including senile, Alzheimer's)	443	0.9	0.5	0.4	0.6
Anxiety disorder**	438	0.9	0.5	0.4	0.5
Schizophrenia	425	0.8	0.4	0.4	0.5
Chronic acne**	378	0.7	0.4	0.3	0.4
Vertiginous syndrome	339	0.7	0.4	0.3	0.4
Chronic pain NOS	333	0.7	0.3	0.3	0.4
Chronic kidney disease – all**	322	0.6	0.3	0.3	0.4
Chronic back pain**	317	0.6	0.3	0.3	0.4
Back syndrome without radiating pain (excluding arthritis, sprains and strains)**	310	0.6	0.3	0.3	0.4
Epilepsy	307	0.6	0.3	0.3	0.4
Subtotal	*40,476*	*79.5*	—	—	—
Total chronic problems	**50,911**	**100.0**	**53.1**	**51.2**	**55.0**

** Includes multiple ICPC-2 or ICPC-2 PLUS codes and indicates that this group differs from that used for analysis in other sections of this chapter, as only chronic conditions have been included in this analysis (see Appendix 4, Table A4.2, <purl.library.usyd.edu.au/sup/9781920899868>).

Note: LCL – lower confidence limit; UCL – upper confidence limit; BMI – body mass index.

7.7 Work-related problems managed

The work-related status of a problem under management is determined by the GP, and is defined as any problem that is likely (in the GP's view) to have resulted from work-related activity or workplace exposure, or a pre-existing condition that had been significantly exacerbated by work activity or workplace exposure. Work-related problems accounted for 1.6% of problems and were managed at a rate of 2.5 per 100 general practice encounters in 2010–11 (Table 7.7).

Table 7.7: Work-related problems, by type and most frequently managed individual problems

Work-related problem managed	Number	Percentage of total work-related problems (*n* = 2,393)	Rate per 100 encounters (*n* = 95,839)	95% LCL	95% UCL	Percentage of this problem[(a)]
Musculoskeletal problems	**1,392**	**58.2**	**1.5**	**1.3**	**1.6**	**8.7**
Back complaint*	349	14.6	0.4	0.3	0.4	13.4
Sprain/strain*	253	10.6	0.3	0.2	0.3	19.0
Injury musculoskeletal NOS	164	6.9	0.2	0.1	0.2	22.8
Fracture*	84	3.5	0.1	0.1	0.1	9.5
Shoulder syndrome	67	2.8	0.1	0.0	0.1	13.3
Bursitis/tendonitis/synovitis NOS	61	2.5	0.1	0.0	0.1	6.0
Arthritis – all*	55	2.3	0.1	0.0	0.1	1.6
Acute internal knee damage	53	2.2	0.1	0.0	0.1	19.3
Neck syndrome	37	1.5	0.0	0.0	0.1	13.5
Psychological problems	**261**	**10.9**	**0.3**	**0.2**	**0.3**	**2.2**
Depression*	102	4.3	0.1	0.1	0.1	2.5
Acute stress reaction	61	2.6	0.1	0.0	0.1	10.7
Anxiety	44	1.8	0.0	0.0	0.1	2.4
Post traumatic stress disorder	37	1.5	0.0	0.0	0.1	27.6
Other work-related problems	**741**	**31.0**	**0.8**	**0.7**	**0.9**	**0.6**
General check-up*	88	3.7	0.1	0.1	0.1	3.4
Injury skin, other	78	3.2	0.1	0.1	0.1	15.4
Administrative procedure – all*	52	2.2	0.1	0.0	0.1	4.8
Laceration/cut	41	1.7	0.0	0.0	0.1	4.6
Total work-related problems	**2,393**	**100.0**	**2.5**	**2.3**	**2.7**	**—**

(a) The proportion of total contacts with this problem that were accounted for by work-related problems.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.1 <purl.library.usyd.edu.au/sup/9781920899868>).

Note: LCL – lower confidence limit; UCL – upper confidence limit; NOS – not otherwise specified. Only the most frequent individual work-related problems accounting for > 1.5% of total work-related problems are reported.

The most common group of work-related problems were musculoskeletal problems, accounting for 58.2% of work-related problems and managed at a rate of 1.5 per 100 general practice encounters. Almost 1 in 10 musculoskeletal problems managed in general practice were work related. The most common musculoskeletal work-related problems were back complaint (14.6% of work-related problems), sprain and strain (10.6%), unspecified musculoskeletal injury (6.9%) and fracture (3.5%).

Work-related psychological problems accounted for 10.9% of total work-related problems, and were managed at a rate of 0.3 per 100 encounters. The most common were depression (4.3% of work-related problems), acute stress reaction (2.6%), anxiety (1.8%) and post-traumatic stress disorder (1.5%). Psychological work-related problems accounted for only 2.2% of total psychological problems managed in general practice.

7.8 Management of Type 2 diabetes in 2010–11

This section (Figure 7.2) uses the example of management of Type 2 diabetes to demonstrate how BEACH data pertaining to a selected problem can be analysed and viewed. In this section Type 2 diabetes is defined as ICPC-2 code T90.

Type 2 diabetes is commonly managed in general practice, with 3,566 recorded contacts with the problem, a management rate of 3.7 per 100 encounters with patients in 2010–11 (Figure 7.2). This represents about 4.4 million encounters at which a Type 2 diabetes was managed in general practice across Australia in that year.

Patient age and sex

Male patients were significantly more likely to have Type 2 diabetes managed (4.3 per 100 male encounters, 95% CI: 4.2–4.5) than females (2.9 per 100 encounters, 95% CI: 2.8–2.9).

Patients aged 65–74 years were most likely to have Type 2 diabetes managed (7.7 per 100 encounters with patients in this age group), followed by patients aged 75 years and over (5.8) and those aged 45–64 years (4.8).

Reasons for encounter

The most common reasons for encounter given by patients were diabetes (32.8 per 100 Type 2 diabetes encounters), need for a prescription (24.4), test result (13.6) or a check-up classified as endocrine/metabolic (9.6).

Other problems managed

Hypertension was the comorbidity most often managed with Type 2 diabetes (23.7 per 100 Type 2 diabetes encounters), followed by lipid disorders (8.1), immunisation/vaccination (4.8), ischaemic heart disease (4.1), and osteoarthritis (4.0).

Medications

Medications were prescribed/supplied or advised for over-the-counter purchase in the management of Type 2 diabetes (77.7 per 100 problems, 95% CI: 72.4–82.7) significantly more often than average for all problems (69.0) in the 2010–11 BEACH year (Table 5.1).

The medications most often prescribed for Type 2 diabetes were metformin (30.3 per 100 problems), gliclazide (13.9), insulin gargline (3.1), atorvastatin (2.5), and insulin aspart (2.2).

Other treatments

Other treatments were provided at a rate of 36.7 per 100 Type 2 diabetes problems. The vast majority (90%) of these treatments were clinical treatments (33.1 per 100 problems), of which counselling and advice about nutrition and weight (10.0), counselling about the diabetes problem (5.5), and the provision of medical certificates (3.7) were the most common.

Procedural treatments were provided at a rate of 6.6 per 100 Type 2 diabetes problems.

Referrals

Referrals were provided at a rate of 13.9 per 100 Type 2 diabetes problems. Referrals to allied health services (8.1 per 100 diabetes problems, 95% CI: 6.6–9.6) were significantly more common than referrals to medical specialists (5.1, 95% CI: 4.2–6.0).

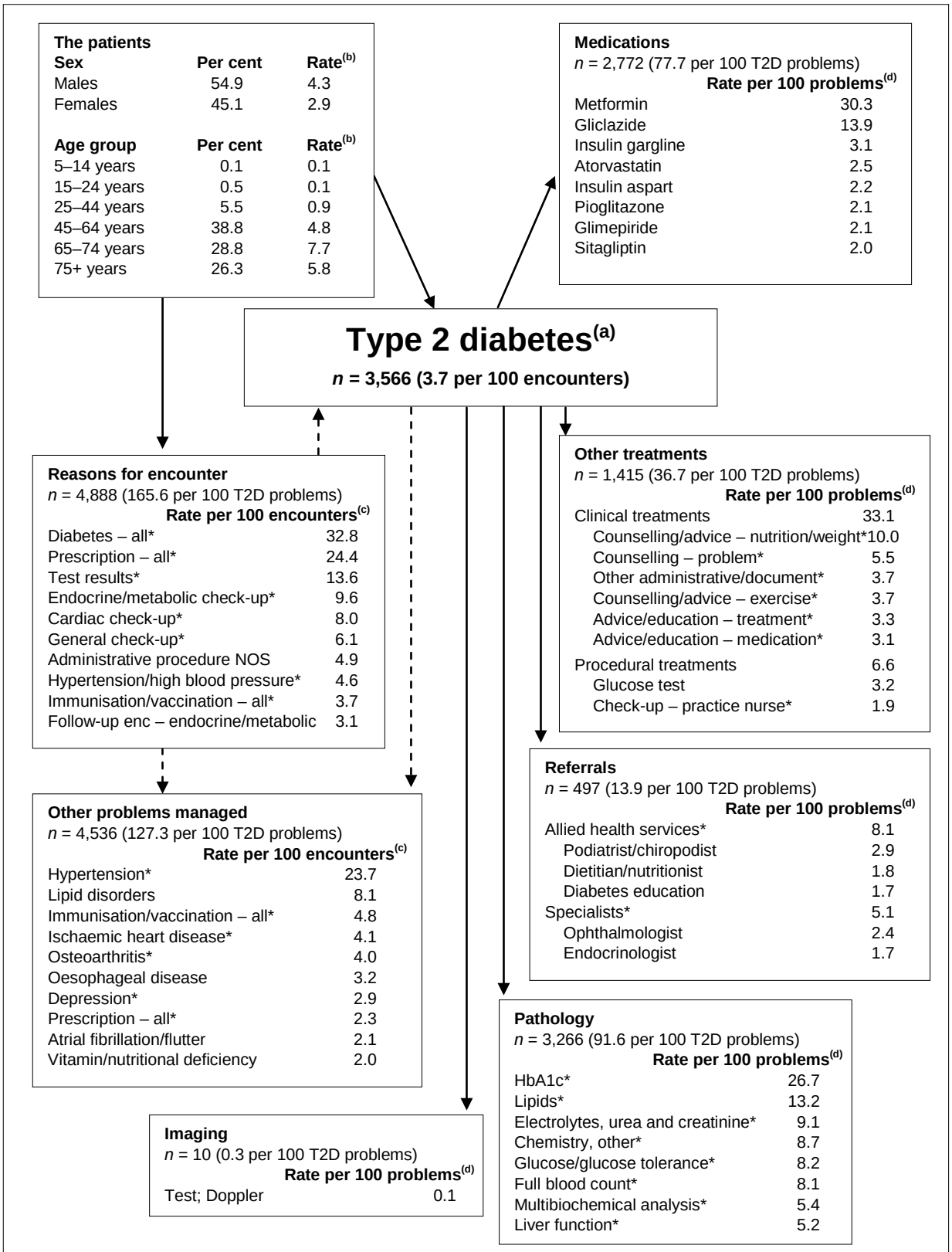
Imaging

Imaging was rarely ordered in the management of Type 2 diabetes (0.3 per 100 diabetes problems).

Pathology

Pathology was ordered in the management of Type 2 diabetes (91.6 per 100 problems, 95% CI: 84.3–98.9) significantly more often than average for all problems (29.6) in the 2010–11 BEACH year (Table 5.1).

The most common pathology tests ordered were HbA1c (26.7 per 100 problems), lipids (13.2), electrolytes, urea and creatinine (9.1), other chemistry tests (8.7), glucose/glucose tolerance (8.2), and full blood count (8.1).



(a) Type 2 diabetes includes the ICPC-2 rubric T90.
(b) Age and sex-specific rate per 100 encounters in each age/sex group.
(c) Expressed as a rate per 100 encounters at which Type 2 diabetes problems were managed.
(d) Expressed as a rate per 100 Type 2 diabetes problems managed
* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, <purl.library.usyd.edu.au/sup/9781920899868>).
Note: T2D – Type 2 diabetes; enc – encounter; other administrative/document – other administrative procedure/document (excluding sickness certificate)

Figure 7.2: Management of Type 2 diabetes in general practice, 2010–11

7.9 Changes in problems managed over the decade 2001–02 to 2010–11

Data about the problems managed in general practice from each of the past 10 years of the BEACH study, 2001–02 to 2010–11 are reported in the companion report *A decade of Australian general practice activity 2001–02 to 2010–11*.[1] Major changes that have occurred over the decade are summarised below.

There was a significant increase in the average number of problems managed at encounter, from 143.4 per 100 encounters in 2001–02 to 152.5 in 2010–11. This suggests there were an additional 36.8 million problems managed at GP encounters in Australia in 2010–11 than in 2001–02. This was reflected in a significant increase in the management rate of chronic conditions (49.3 rising to 53.1 per 100 encounters) over the decade.

Changes in the most common individual problems managed in general practice are summarised below.

- The management rate of depression increased from 3.4 per 100 encounters in 2001–02 to 4.2 in 2010–11, an estimated national increase of 1.7 million occasions of depression management in 2010–11 since 2001–02.
- The management rate of diabetes increased significantly from 3.1 per 100 encounters in 2001–02 to 4.0 in 2010–11, suggesting about 1.6 million more occasions of diabetes management in 2010–11 than in 2001–02.
- The management rate of general check-up increased from 1.8 per 100 encounters in 2001–02 to 2.7 in 2010–11. This represents an estimated national increase of 1.4 million occasions where a general check-up was managed in 2010–11 since 2001–02. This increase possibly reflects the many MBS items for health assessments including the annual assessment of patients aged 75 years and over, the health assessment for 45–49 year olds at risk of developing chronic disease and the assessment of 40–49 year olds at risk of Type 2 diabetes.[65]
- The management rate of immunisation/vaccinations did not change between 2001–02 (4.7 per 100 encounters) and 2010–11 (5.5). However there was a significant spike in the management rate in 2009–10 (7.3 per 100) that coincided with the concern about H1N1 influenza.
- The management rate of URTI decreased marginally from 6.2 per 100 encounters in 2001–02 to 5.4 in 2010–11. However, the large increase in the number of GP encounters provided in Australia (99.9 million in 2001–02 and 118.1 million in 2010–11) outweighed this decrease, resulting in 180,000 more occasions where URTI was managed nationally in 2010–11 than in 2001–02.

8 Overview of management

The BEACH survey form allows GPs to record several aspects of patient management for each problem managed at each encounter. Pharmaceutical management is recorded in detail. Other modes of treatment, including clinical treatments (for example, counselling) and procedures, recorded briefly in the GP's own words, are also related to a single problem. The form allows for referrals, hospital admissions, pathology and imaging test orders to be related to a single problem or to multiple problems (see Appendix 1).

A summary of management at general practice encounters from 2001–02 to 2010–11 is reported for each year in the 10-year report *A decade of Australian general practice activity 2001–02 to 2010–11*.[1]

At the 95,839 encounters, GPs undertook 217,958 management activities in total. The most common management form was medication, either prescribed, GP-supplied, or advised for over-the-counter purchase. 'Other treatments' were the second most common management activity, with clinical treatments more frequent than procedural treatments (Table 8.1).

For an 'average' 100 GP–patient encounters, GPs provided 85 prescriptions, and 36 clinical treatments, undertook 17 procedures, made 9 referrals to medical specialists and 4 to allied health services, and placed 45 pathology test orders and 10 imaging test orders.

Table 8.1: Summary of management

Management type	Number	Rate per 100 encounters (*n* = 95,839)	95% LCL	95% UCL	Rate per 100 problems (*n* = 146,141)	95% LCL	95% UCL
Medications	100,817	105.2	102.8	107.6	69.0	67.6	70.3
Prescribed	81,542	85.1	82.9	87.3	55.8	54.5	57.1
GP-supplied	9,903	10.3	9.5	11.2	6.8	6.2	7.3
Advised OTC	9,371	9.8	9.0	10.5	6.4	5.9	6.9
Other treatments	50,235	52.4	49.8	55.1	34.4	32.7	36.0
Clinical*	34,019	35.5	33.2	37.8	23.3	21.8	24.8
Procedural*	16,216	16.9	16.1	17.8	11.1	10.6	11.6
Referrals	13,526	14.1	13.5	14.7	9.3	8.9	9.6
Medical specialist*	8,248	8.6	8.2	9.0	5.6	5.4	5.9
Allied health services*	4,039	4.2	3.9	4.5	2.8	2.6	2.9
Hospital*	364	0.4	0.3	0.4	0.3	0.2	0.3
Emergency department*	291	0.3	0.3	0.4	0.2	0.2	0.2
Other referrals*	584	0.6	0.5	0.7	0.4	0.3	0.5
Pathology	43,313	45.2	43.4	47.0	29.6	28.6	30.7
Imaging	9,370	9.8	9.4	10.2	6.4	6.1	6.7
Other investigations[(a)]	697	0.7	0.7	0.8	0.5	0.4	0.5
Total management activities	**217,958**	**227.4**	**—**	**—**	**149.2**	**—**	**—**

(a) Other investigations reported here include only those ordered by the GP. Other investigations in Chapter 12 include those ordered by the GP and those done by the GP or practice staff.

* Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 4, <purl.library.usyd.edu.au/sup/9781920899868>).

Note: LCL – lower confidence limit; UCL – upper confidence limit; OTC – over-the-counter.

Analysing the number of encounters or problems for which at least one form of management was recorded by the GPs gives us another perspective (Table 8.2). At least one management action was recorded at 91.5% of encounters, for 85.9% of problems managed.

- At least one medication or other treatment was given for nearly three-quarters (72.4%) of the problems managed.
- At least one medication (most commonly prescribed) was prescribed, supplied or advised for more than half (54.0%) of the problems managed.
- At least one other treatment (most commonly clinical) was provided for nearly one-third (30.4%) of problems managed.
- At least one referral (most commonly to a medical specialist) was made for 9.2% of problems managed.
- At least one investigation (most commonly pathology) was requested for 18.2% of problems managed (Table 8.2).

Table 8.2: Encounters and problems for which management was recorded

Management type	Number of encounters	Per cent of all encounters (*n* = 95,839)	Number of problems	Per cent of all problems (*n* = 146,141)
At least one management type	**87,656**	**91.5**	**125,541**	**85.9**
At least one medication or other treatment	**78,005**	**81.4**	**105,830**	**72.4**
At least one medication	**62,019**	**64.7**	**78,987**	**54.0**
At least one prescription	52,016	54.3	65,262	44.7
At least one GP-supplied	7,684	8.0	7,897	5.4
At least one OTC advised	8,257	8.6	8,499	5.8
At least one other treatment	**38,411**	**40.1**	**44,447**	**30.4**
At least one clinical treatment	26,772	27.9	30,507	20.9
At least one procedural treatment	14,499	15.1	15,194	10.4
At least one referral	**12,486**	**13.0**	**13,461**	**9.2**
At least one referral to a medical specialist	7,874	8.2	8,353	5.7
At least one referral to allied health services	3,780	3.9	3,995	2.7
At least one referral to hospital	364	0.4	386	0.3
At least one referral to emergency department	291	0.3	315	0.2
At least one other referral	584	0.6	609	0.4
At least one investigation	**23,121**	**24.1**	**26,579**	**18.2**
At least one pathology order	17,072	17.8	19,493	13.3
At least one imaging order	8,009	8.4	8,315	5.7
At least one other investigation[(a)]	675	0.7	680	0.5

(a) Other investigations reported here only include those ordered by the GP. Other investigations in Chapter 12 include those ordered by the GP and those done by the GP or practice staff.

Note: OTC – over-the-counter; NOS – not otherwise specified.

The combinations of management types related to each problem were investigated. The majority of treatments occurred either as a single component or in combination with one other component. Management was provided:

- as a single component for almost two-thirds (63.0%) of the problems managed
- as a double component for 19.0% of problems managed
- rarely with more than two components (results not tabled).

Table 8.3 lists the most common management combinations. Medication alone was the most common management, followed by a clinical treatment alone, and the combination of a medication and a clinical treatment. When a problem was referred to another health professional it was most likely that no other treatments were given for the problem at the encounter.

Table 8.3: Most common management combinations

1+ medication	1+ clinical treatment	1+ procedural treatment	1+ referral	1+ imaging order	1+ pathology order	Per cent of total problems (*n* = 146,141)	Per cent of total encounters (*n* = 95,839)
No recorded management						**14.1**	**8.5**
1+ management recorded						**85.9**	**91.5**
✓						37.4	31.4
	✓					9.4	6.9
✓	✓					6.1	10.2
					✓	5.0	2.9
			✓			4.6	3.4
		✓				4.3	3.7
✓					✓	3.2	4.7
✓		✓				2.6	4.3
				✓		2.3	1.7
✓			✓			1.3	1.3
		✓			✓	1.3	3.0
	✓				✓	1.2	1.3
✓				✓		1.0	1.9
	✓		✓			0.9	1.2
✓	✓				✓	0.5	1.7
				✓	✓	0.5	0.6
✓	✓		✓			0.4	1.1
✓		✓			✓	0.3	1.1
	✓	✓				0.3	0.6
	✓			✓		0.3	0.5
			✓		✓	0.3	0.4

Note: 1+ – at least one specified management type.

8.1 Changes in management over the decade 2001–02 to 2010–11

Changes over the decade 2001–02 to 2010–11 are described in detail in the accompanying report *A decade of Australian general practice activity 2001–02 to 2010–11*.[1] In that publication, changes over time are largely reported in terms of change in management actions as a rate per 100 problems. This reflects change in how GPs are managing problems after accounting for the significant increase in the number of problems managed per encounter over the decade (see Section 7.9).

The major changes over the 10 years to 2010–11 are summarised below.

- There was a significant decrease in the proportion of problems managed for which one or more medications were prescribed (from 49.8% to 44.7%), and in the total number of medications prescribed (from 61.3 per 100 problems managed to 55.8).
- There was a significant increase in the proportion of problems for which the GP supplied medication direct to the patients (from 4.3% to 5.4% of problems managed), and an increase in the total number of medications supplied in this manner (5.3 medications to 6.8 per 100 problems managed).
- One or more procedures were undertaken for a significantly greater proportion of the problems managed in 2010–11 (10.4%) than in 2001–02 (9.1%). The rate at which procedures were undertaken by GPs increased from 9.6 to 11.1 procedures per 100 problems managed over the decade.
- The likelihood of patients being referred for the problem being managed increased significantly (from 7.3% of problems managed in 2001–02 to 9.2% in 2010–11 being referred), particularly to medical specialists (from 5.1% in 2001–02 to 5.7% in 2010–11), allied health services (1.6% to 2.7%), and emergency departments (from 0.1% to 0.2%).
- There was an increase in the likelihood of the GP ordering at least one investigation for the problem under management, 15.3% of problems being sent for investigation in 2001–02 and 18.2% in 2010–11. In 2001–02, at least one pathology test was ordered for 10.8% of problems managed, and at least one imaging test was ordered for 5.0%. By 2010–11 these proportions had significantly increased to 13.3% and 5.7% of problems, respectively.

9 Medications

GPs could record up to four medications for each of four problems – a maximum of 16 medications per encounter. Each medication could be recorded as prescribed (the default), supplied by the GP, or recommended for over-the-counter (OTC) purchase.

- GPs were asked to:
  - record the generic or brand name, the strength, regimen and number of repeats ordered for each medication
  - designate this as a new or continued medication for this patient for this problem.
- Generic or brand names were entered into the database in the form recorded by the GP.
- Medications were coded using the Coding Atlas of Pharmaceutical Substances (CAPS) system (developed by the FMRC) which is able to capture details of products at the brand and generic level. Every medication in the CAPS coding system is mapped to the international Anatomical Therapeutic Chemical (ATC) classification.[66]
- The reporting of results at drug group, subgroup and generic level uses ATC levels 1, 3 and 5. The most frequently prescribed, supplied or advised individual medications are reported at the CAPS generic level (the equivalent of ATC Level 5) because ATC does not include many over-the-counter medications that arise in BEACH. Further, some ATC level 5 labels are not specific enough for clarity.

Data on medications are reported for each year from 2001–02 to 2010–11 in the 10-year summary report, *A decade of Australian general practice activity 2001–02 to 2010–11*.[1]

Readers interested in adverse drug events will find more detailed information from the BEACH program in Miller et al. (2006) *Adverse drug events in general practice patients in Australia*.[67]

9.1 Source of medications

As reported in Chapter 8, a total of 100,817 medications were recorded, at rates of 105 per 100 encounters and 69 per 100 problems managed.

- Four out of five medications (80.9%) were prescribed.
- One in ten (9.8%) medications was supplied to the patient by the GP.
- There were 9.3% of medications recommended by the GP for OTC purchase.

When rate per 100 encounter results are extrapolated to the 118.1 million general practice Medicare-claimed encounters in Australia April 2010 – March 2011, GPs in Australia:

- prescribed medications more than 100.5 million times
- supplied 12.2 million medications directly to the patient
- recommended medications for OTC purchase 11.6 million times.

9.2 Prescribed medications

There were 81,542 prescriptions recorded, at rates of 85 per 100 encounters and 56 per 100 problems managed (Table 8.1). GPs recorded 84.2% of prescribed medications by brand (proprietary) name and 15.8% by their generic (non-proprietary) name (results not tabled).

On a per problem basis:

- no prescription was given for 55.3% of all problems managed
- one prescription was given for 36.3% of problems managed
- two prescriptions were given for 6.2% of problems managed
- three or four prescriptions were given for 2.1% of problems managed (Figure 9.1).

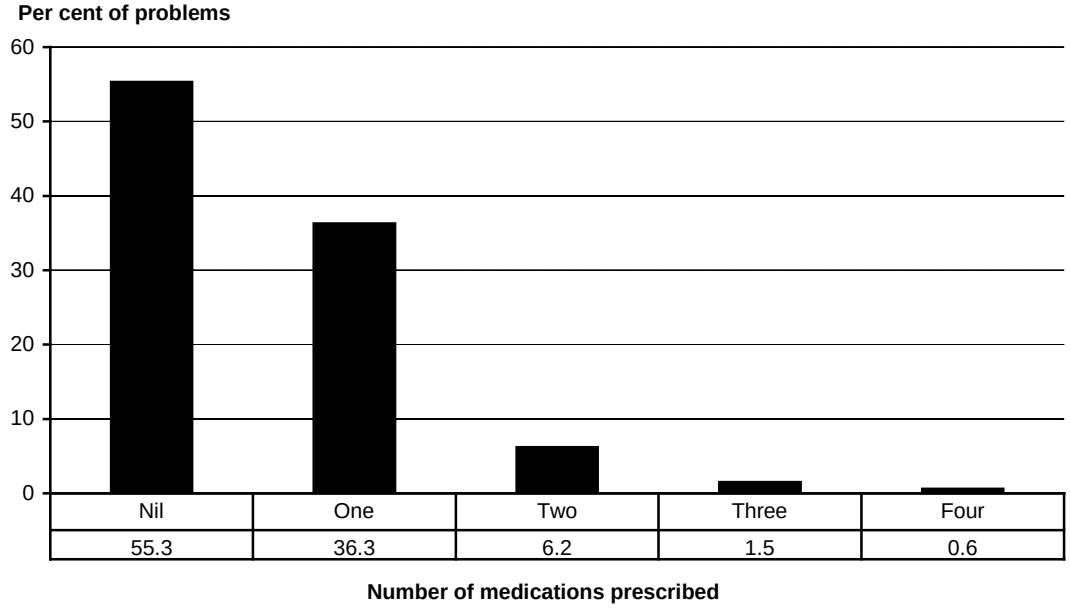


Figure 9.1: Number of medications prescribed per problem

Number of repeats

For 62,602 prescriptions (76.8% of all prescriptions) the GPs recorded 'number of repeats'. The distribution of the specified number of repeats (from nil to more than five) is provided in Figure 9.2. For 34.7% of these prescriptions, the GP specified that no repeats had been prescribed, and for 35.4% five repeats were ordered. The latter proportion reflects the PBS provision of 1 month's supply and five repeats for many medications used for chronic conditions such as hypertension. The ordering of one repeat was also quite common (15.9%).

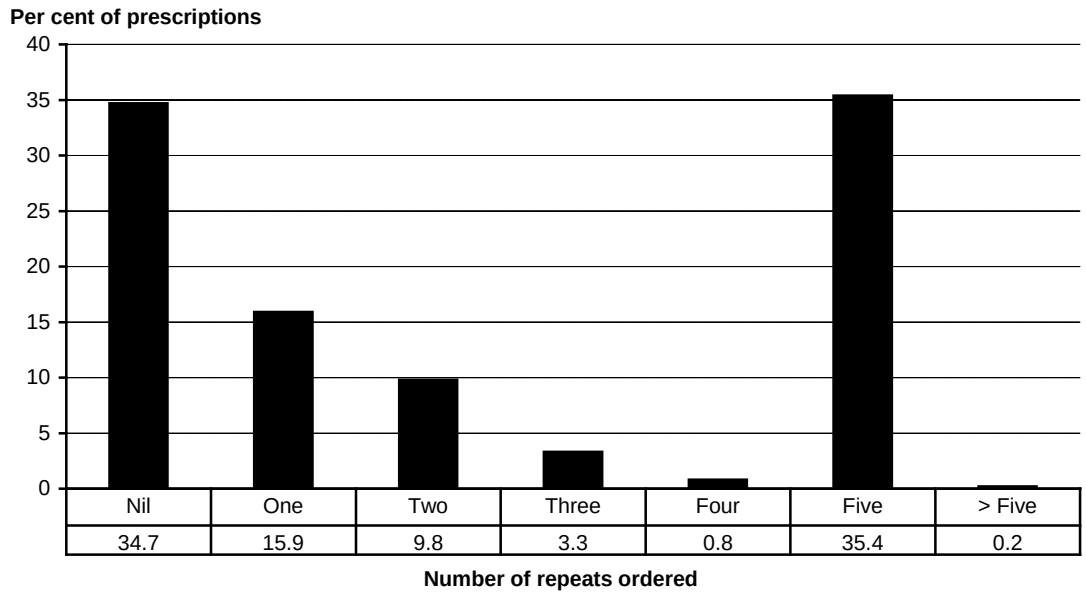
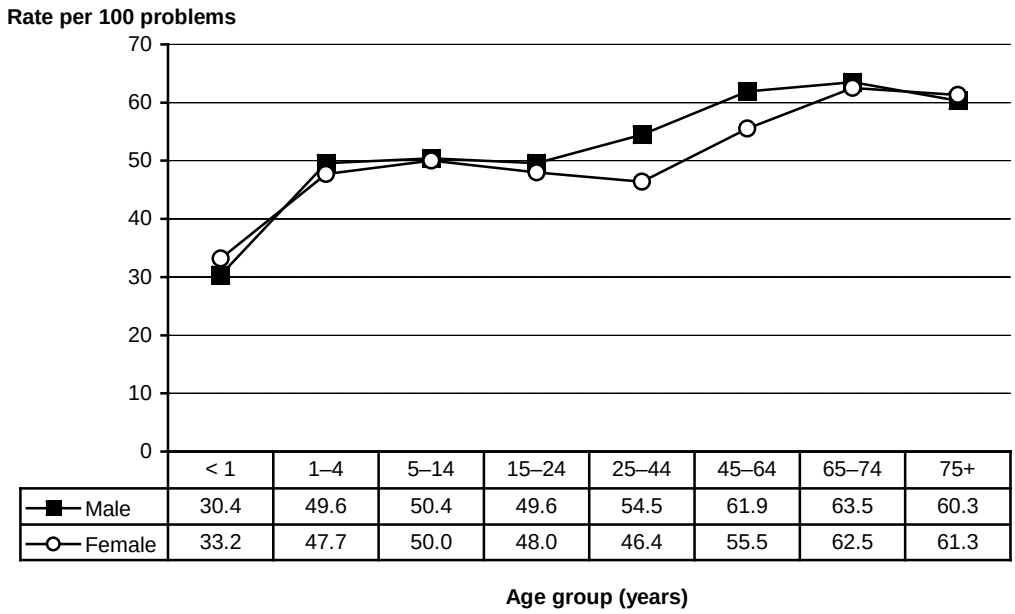


Figure 9.2: Number of repeats ordered per prescription

Age–sex-specific rates of prescribed medications

Age–sex-specific analysis found similar prescription rates per 100 encounters (where age and sex was known) for males and females (87 and 84 respectively). It also showed the well-described tendency for the number of prescriptions written at each encounter to rise with the advancing age of the patient, with the rate of 58 per 100 encounters with patients aged less than 25 years almost doubling to 109 per 100 encounters for patients aged 65 years and over (results not tabled).

Figure 9.3, however, demonstrates that this age-based increase lessens if the prescription rate is considered in terms of the number of problems being managed in each age group. This suggests that a substantial part of the increase in prescription rate for older patients is due to the increased number of health problems they have managed at an encounter. The remaining increase in prescription rate associated with patient age is probably a reflection of the problems under management, which are more likely to be chronic at encounters with older patients.



	< 1	1–4	5–14	15–24	25–44	45–64	65–74	75+
Male	30.4	49.6	50.4	49.6	54.5	61.9	63.5	60.3
Female	33.2	47.7	50.0	48.0	46.4	55.5	62.5	61.3

Figure 9.3: Age–sex-specific prescription rates per 100 problems managed

Types of medications prescribed

Table 9.1 shows the distribution of prescribed medications using the WHO ATC classification.[66] This allows comparison with other data sources such as those produced by Medicare Australia for PBS data. The table lists medications in frequency order within ATC levels 1, 3 and 5. Prescriptions are presented as a percentage of total prescriptions, as a rate per 100 encounters, and as a rate per 100 problems managed, with 95% confidence intervals.

The high number of opioids shown in this table (compared with BEACH data published before 2010) is due to our re-classification of some medications in 2010. We decided to recode codeine combinations which contained 30 mg of codeine as opioids in the ATC Index, whereas in the past they were coded as 'other analgesics and antipyretics'. In the ATC classification, either grouping is correct. We took the decision to place high-dose codeine products in the opioid group in accordance with MIMS grouping[68] and following the Poisons Regulations of the Therapeutic Goods Administration,[69] which stipulates that high-dose codeine combinations are Schedule 4 (prescription only) medications. However, a few combination analgesics containing less than 30 mg of codeine but classified as Schedule 4 may be missed because there are other criteria which form part of the scheduling of prescription-only codeine. One of these is pack-size, which is not recorded in BEACH.

Similarly, before 2010 all aspirin (acetylsalicylic acid) was classified in the analgesic group of neurological medications. In 2010 we split aspirin into two different codes depending on dosage. We reclassified low-dose (100 mg) plain aspirin as an anti-thrombotic medication in the blood medications group, while higher doses and combinations with other analgesic/antipyretics remain in the neurological group.

If readers are making comparisons with previous BEACH publications, they should note that this change has caused the opioid and anti-thrombotic groups to increase, and 'other analgesics and antipyretics' to decrease. In the companion report to this current publication, *A decade of Australian general practice activity 2001–02 to 2010–11*,[1] medications have been re-analysed across all 10 years to incorporate the adjustment.

Table 9.1: Prescribed medications by ATC levels 1, 3 and 5

ATC Level 1	ATC Level 3	ATC Level 5	Number	Per cent of prescribed medications (*n* = 81,542)	Rate per 100 encounters (95% CI) (*n* = 95,839)	Rate per 100 problems (95% CI) (*n* = 146,141)
Nervous system			**18,124**	**22.2**	**18.9 (18.1–19.7)**	**12.4 (11.9–12.9)**
	Opioids		5,235	6.4	5.5 5.1–5.8	3.6 (3.4–3.8)
		Codeine, combinations excl. psycholeptics	1,714	2.1	1.8 (1.7–1.9)	1.2 (1.1–1.3)
		Oxycodone	1,401	1.7	1.5 (1.3–1.6)	1.0 (0.9–1.0)
		Tramadol	830	1.0	0.9 (0.8–1.0)	0.6 (0.5–0.6)
	Antidepressants		3,757	4.6	3.9 (3.7–4.1)	2.6 (2.4–2.7)
		Sertraline	553	0.7	0.6 (0.5–0.6)	0.4 (0.3–0.4)
		Venlafaxine	496	0.6	0.5 (0.5–0.6)	0.3 (0.3–0.4)
	Other analgesics and antipyretics		2,734	3.4	2.9 (2.6–3.1)	1.9 (1.7–2.0)
		Paracetamol [plain]	2,427	3.0	2.5 (2.3–2.8)	1.7 (1.5–1.8)
	Anxiolytics		1,742	2.1	1.8 (1.6–2.0)	1.2 (1.1–1.3)
		Diazepam	996	1.2	1.0 (0.9–1.2)	0.7 (0.6–0.8)
	Hypnotics and sedatives		1,438	1.8	1.5 (1.4–1.6)	1.0 (0.9–1.1)
		Temazepam	955	1.2	1.0 (0.9–1.1)	0.7 (0.6–0.7)
	Antipsychotics		1,146	1.4	1.2 (1.1–1.3)	0.8 (0.7–0.9)
		Prochlorperazine	505	0.6	0.5 (0.5–0.6)	0.3 (0.3–0.4)
	Drugs used in addictive disorders		770	0.9	0.8 (0.7–0.9)	0.5 (0.5–0.6)
		Varenicline	513	0.6	0.5 (0.5–0.6)	0.4 (0.3–0.4)
	Antiepileptics		737	0.9	0.8 (0.7–0.9)	0.5 (0.4–0.6)
Anti-infective for systemic use			**15,787**	**19.4**	**16.5 (15.9–17.0)**	**10.8 (10.4–11.2)**
	Beta-lactam antibacterials, penicillins		6,089	7.5	6.4 (6.0–6.7)	4.2 (3.9–4.4)
		Amoxycillin	3,117	3.8	3.3 (3.0–3.5)	2.1 (2.0–2.3)
		Amoxycillin and enzyme inhibitor	1,905	2.3	2.0 (1.8–2.2)	1.3 (1.2–1.4)

(continued)

Table 9.1 (continued): Prescribed medications by ATC levels 1, 3 and 5

ATC Level 1	ATC Level 3	ATC Level 5	Number	Per cent of prescribed medications (n = 81,542)	Rate per 100 encounters (95% CI) (n = 95,839)	Rate per 100 problems (95% CI) (n = 146,141)
	Other beta-lactam antibacterials		3,155	3.9	3.3 (3.1–3.5)	2.2 (2.0–2.3)
		Cefalexin	2,616	3.2	2.7 (2.5–2.9)	1.8 (1.7–1.9)
	Macrolides, lincosamides and streptogramins		2,434	3.0	2.5 (2.4–2.7)	1.7 (1.5–1.8)
		Roxithromycin	1,060	1.3	1.1 (1.0–1.2)	0.7 (0.7–0.8)
		Erythromycin	663	0.8	0.7 (0.6–0.8)	0.5 (0.4–0.5)
		Clarithromycin	488	0.6	0.5 (0.4–0.6)	0.3 (0.3–0.4)
	Viral vaccines		822	1.0	0.9 (0.7–1.0)	0.6 (0.5–0.7)
	Tetracyclines		756	0.9	0.8 (0.7–0.9)	0.5 (0.5–0.6)
		Doxycycline	673	0.8	0.7 (0.6–0.8)	0.5 (0.4–0.5)
	Sulfonamides and trimethoprim		707	0.9	0.7 (0.7–0.8)	0.5 (0.4–0.5)
		Trimethoprim	481	0.6	0.5 (0.4–0.6)	0.3 (0.3–0.4)
Cardiovascular system			**15,664**	**19.2**	**16.3 (15.5–17.2)**	**10.7 (10.2–11.2)**
	Lipid modifying agents, plain		3,436	4.2	3.6 (3.4–3.8)	2.4 (2.2–2.5)
		Atorvastatin	1,516	1.9	1.6 (1.5–1.7)	1.0 (1.0–1.1)
		Rosuvastatin	909	1.1	0.9 (0.9–1.0)	0.6 (0.6–0.7)
		Simvastatin	593	0.7	0.6 (0.6–0.7)	0.4 (0.4–0.4)
	Angiotensin II antagonists, plain		2,192	2.7	2.3 (2.1–2.5)	1.5 (1.4–1.6)
		Irbesartan	806	1.0	0.8 (0.7–0.9)	0.6 (0.5–0.6)
		Candesartan	616	0.8	0.6 (0.6–0.7)	0.4 (0.4–0.5)
		Telmisartan	602	0.7	0.6 (0.5–0.7)	0.4 (0.4–0.5)
	ACE inhibitors, plain		2,121	2.6	2.2 (2.1–2.4)	1.5 (1.4–1.6)
		Perindopril	1,116	1.4	1.2 (1.1–1.3)	0.8 (0.7–0.8)
		Ramipril	625	0.8	0.7 (0.6–0.7)	0.4 (0.4–0.5)

(continued)

Table 9.1 (continued): Prescribed medications by ATC levels 1, 3 and 5

ATC Level 1	ATC Level 3	ATC Level 5	Number	Per cent of prescribed medications (n = 81,542)	Rate per 100 encounters (95% CI) (n = 95,839)	Rate per 100 problems (95% CI) (n = 146,141)
	Beta blocking agents		1,629	2.0	1.7 (1.6–1.8)	1.1 (1.0–1.2)
		Atenolol	716	0.9	0.7 (0.7–0.8)	0.5 (0.4–0.5)
		Metoprolol	498	0.6	0.5 (0.5–0.6)	0.3 (0.3–0.4)
	Angiotensin II antagonists, combinations		1,405	1.7	1.5 (1.3–1.6)	1.0 (0.9–1.0)
		Irbesartan and diuretics	685	0.8	0.7 (0.6–0.8)	0.5 (0.4–0.5)
	Selective calcium channel blockers with mainly vascular effects		1,367	1.7	1.4 (1.3–1.5)	0.9 (0.9–1.0)
		Amlodipine	579	0.7	0.6 (0.5–0.7)	0.4 (0.4–0.4)
	ACE inhibitors, combinations		579	0.7	0.6 (0.5–0.7)	0.4 (0.4–0.4)
	High-ceiling diuretics		576	0.7	0.6 (0.5–0.7)	0.4 (0.4–0.4)
		Furosemide	568	0.7	0.6 (0.5–0.7)	0.4 (0.3–0.4)
Alimentary tract and metabolism			**7,971**	**9.8**	**8.3 (7.9–8.7)**	**5.5 (5.2–5.7)**
	Drugs for peptic ulcer and gastro-oesophageal reflux		2,939	3.6	3.1 (2.9–3.2)	2.0 (1.9–2.1)
		Esomeprazole	1,184	1.5	1.2 (1.1–1.3)	0.8 (0.7–0.9)
		Pantoprazole	628	0.8	0.7 (0.6–0.7)	0.4 (0.4–0.5)
	Blood glucose lowering drugs, excluding insulins		2,200	2.7	2.3 (2.1–2.5)	1.5 (1.4–1.6)
		Metformin	1,254	1.5	1.3 (1.2–1.4)	0.9 (0.8–0.9)
		Gliclazide	554	0.7	0.6 (0.5–0.6)	0.4 (0.3–0.4)
	Propulsives		636	0.8	0.7 (0.6–0.7)	0.4 (0.4–0.5)
		Metoclopramide	525	0.6	0.5 (0.5–0.6)	0.4 (0.3–0.4)

(continued)

Table 9.1 (continued): Prescribed medications by ATC levels 1, 3 and 5

ATC Level 1	ATC Level 3	ATC Level 5	Number	Per cent of prescribed medications (n = 81,542)	Rate per 100 encounters (95% CI) (n = 95,839)	Rate per 100 problems (95% CI) (n = 146,141)
Respiratory system			**5,297**	**6.5**	**5.5 (5.1–5.9)**	**3.6 (3.4–3.9)**
	Adrenergics, inhalants		2,746	3.4	2.9 (2.7–3.1)	1.9 (1.7–2.0)
		Salbutamol	1,284	1.6	1.3 (1.2–1.5)	0.9 (0.8–1.0)
		Salmeterol and other drugs for obstructive airways disease	812	1.0	0.8 (0.8–0.9)	0.6 (0.5–0.6)
		Formoterol and other drugs for obstructive airways disease	519	0.6	0.5 (0.5–0.6)	0.4 (0.3–0.4)
	Decongestants and other nasal preparations for topical use		890	1.1	0.9 (0.8–1.0)	0.6 (0.5–0.7)
	Other drugs for obstructive airway diseases, inhalants		841	1.0	0.9 (0.8–1.0)	0.6 (0.5–0.6)
Musculoskeletal system			**4,141**	**5.1**	**4.3 (4.1–4.6)**	**2.8 (2.7–3.0)**
	Anti-inflammatory and antirheumatic products, non-steroid		3,040	3.7	3.2 (3.0–3.4)	2.1 (1.9–2.2)
		Meloxicam	922	1.1	1.0 (0.9–1.1)	0.6 (0.6–0.7)
		Diclofenac	597	0.7	0.6 (0.5–0.7)	0.4 (0.4–0.5)
		Celecoxib	498	0.6	0.5 (0.5–0.6)	0.3 (0.3–0.4)
Dermatologicals			**3,683**	**4.5**	**3.8 (3.6–4.1)**	**2.5 (2.4–2.7)**
	Corticosteroids, plain		2,218	2.7	2.3 (2.2–2.5)	1.5 (1.4–1.6)
		Betamethasone	757	0.9	0.8 (0.7–0.9)	0.5 (0.5–0.6)
		Mometasone	627	0.8	0.7 (0.6–0.7)	0.4 (0.4–0.5)
Genitourinary system and sex hormones			**3,014**	**3.7**	**3.1 (3.0–3.3)**	**2.1 (1.9–2.2)**
	Hormonal contraceptives for systemic use		1,343	1.6	1.4 (1.3–1.5)	0.9 (0.8–1.0)
		Levonorgestrel and oestrogen	742	0.9	0.8 (0.7–0.9)	0.5 (0.5–0.6)
Blood and blood forming organs			**2,647**	**3.2**	**2.8 (2.5–3.0)**	**1.8 (1.7–1.9)**
	Antithrombotic agents		2,046	2.5	2.1 (2.0–2.3)	1.4 (1.3–1.5)
		Warfarin	1,129	1.4	1.2 (1.0–1.3)	0.8 (0.7–0.9)

(continued)

Table 9.1 (continued): Prescribed medications by ATC levels 1, 3 and 5

ATC Level 1	ATC Level 3	ATC Level 5	Number	Per cent of prescribed medications (n = 81,542)	Rate per 100 encounters (95% CI) (n = 95,839)	Rate per 100 problems (95% CI) (n = 146,141)
Sensory organs			**2,351**	**2.9**	**2.5 (2.3–2.6)**	**1.6 (1.5–1.7)**
	Anti-infective ophthalmological		923	1.1	1.0 (0.9–1.0)	0.6 (0.6–0.7)
		Chloramphenicol ophthalmological	850	1.0	0.9 (0.8–1.0)	0.6 (0.5–0.6)
	Corticosteroids and anti-infective in combination otological		660	0.8	0.7 (0.6–0.8)	0.5 (0.4–0.5)
Systemic hormonal preparations, excl. sex hormones			**2,078**	**2.5**	**2.2 (2.0–2.3)**	**1.4 (1.3–1.5)**
	Corticosteroids for systemic use, plain		1,199	1.5	1.3 (1.1–1.4)	0.8 (0.7–0.9)
		Prednisolone	780	1.0	0.8 (0.7–0.9)	0.5 (0.5–0.6)
	Thyroid preparations		673	0.8	0.7 (0.6–0.8)	0.5 (0.4–0.5)
		Levothyroxine sodium	672	0.8	0.7 (0.6–0.8)	0.5 (0.4–0.5)
Antineoplastic and immunomodulating agents			**377**	**0.5**	**0.4 (0.3–0.4)**	**0.3 (0.2–0.3)**
Various			**254**	**0.3**	**0.3 (0.2–0.3)**	**0.2 (0.1–0.2)**
Antiparasitic products, insecticides and repellent			**156**	**0.2**	**0.2 (0.1–0.2)**	**0.1 (0.1–0.1)**
Total prescribed medications			**81,542**	**100.0**	**85.1 (82.9–87.3)**	**55.8 (54.5–57.1)**

Note: ATC – Anatomical Therapeutic Chemical classification; CI – confidence interval; ACE – angiotensin-converting enzyme.

Most frequently prescribed medications

The most frequently prescribed individual medications are reported at the CAPS generic level (ATC Level 5 equivalent) in Table 9.2. Together these 30 medications made up 43.0% of all prescribed medications.

Table 9.2: Most frequently prescribed medications

Generic medication	Number	Per cent of prescribed medications (n = 81,542)	Rate per 100 encounters (95% CI) (n = 95,839)	Rate per 100 problems (95% CI) (n = 146,141)
Amoxycillin	3,117	3.8	3.3 (3.0–3.5)	2.1 (2.0–2.3)
Cephalexin	2,616	3.2	2.7 (2.5–2.9)	1.8 (1.7–1.9)
Paracetamol [plain]	2,427	3.0	2.5 (2.3–2.8)	1.7 (1.5–1.8)
Amoxycillin/potassium clavulanate	1,905	2.3	2.0 (1.8–2.2)	1.3 (1.2–1.4)
Paracetamol/codeine [all]	1,793	2.2	1.9 (1.7–2.0)	1.2 (1.1–1.3)
Atorvastatin	1,516	1.9	1.6 (1.5–1.7)	1.0 (1.0–1.1)
Oxycodone	1,401	1.7	1.5 (1.3–1.6)	1.0 (0.9–1.0)
Salbutamol	1,327	1.6	1.4 (1.2–1.5)	0.9 (0.8–1.0)
Metformin	1,254	1.5	1.3 (1.2–1.4)	0.9 (0.8–0.9)
Esomeprazole	1,184	1.5	1.2 (1.1–1.3)	0.8 (0.7–0.9)
Warfarin sodium	1,129	1.4	1.2 (1.0–1.3)	0.8 (0.7–0.9)
Perindopril	1,116	1.4	1.2 (1.1–1.3)	0.8 (0.7–0.8)
Roxithromycin	1,060	1.3	1.1 (1.0–1.2)	0.7 (0.7–0.8)
Diazepam	996	1.2	1.0 (0.9–1.2)	0.7 (0.6–0.8)
Temazepam	955	1.2	1.0 (0.9–1.1)	0.7 (0.6–0.7)
Meloxicam	922	1.1	1.0 (0.9–1.1)	0.6 (0.6–0.7)
Rosuvastatin	909	1.1	0.9 (0.9–1.0)	0.6 (0.6–0.7)
Chloramphenicol eye	850	1.0	0.9 (0.8–1.0)	0.6 (0.5–0.6)
Tramadol	830	1.0	0.9 (0.8–1.0)	0.6 (0.5–0.6)
Fluticasone/salmeterol	812	1.0	0.8 (0.8–0.9)	0.6 (0.5–0.6)
Irbesartan	806	1.0	0.8 (0.7–0.9)	0.6 (0.5–0.6)
Betamethasone topical	757	0.9	0.8 (0.7–0.9)	0.5 (0.5–0.6)
Levonorgestrel/ethinyloestradiol	740	0.9	0.8 (0.7–0.8)	0.5 (0.5–0.6)
Atenolol	716	0.9	0.7 (0.7–0.8)	0.5 (0.4–0.5)
Irbesartan/hydrochlorothiazide	685	0.8	0.7 (0.6–0.8)	0.5 (0.4–0.5)
Doxycycline	673	0.8	0.7 (0.6–0.8)	0.5 (0.4–0.5)
Thyroxine	672	0.8	0.7 (0.6–0.8)	0.5 (0.4–0.5)
Erythromycin	663	0.8	0.7 (0.6–0.8)	0.5 (0.4–0.5)
Pantoprazole	628	0.8	0.7 (0.6–0.7)	0.4 (0.4–0.5)
Mometasone	627	0.8	0.7 (0.6–0.7)	0.4 (0.4–0.5)
Subtotal	*35,084*	*43.0*	—	—
Total prescribed medications	**81,542**	**100.0**	**85.1 (82.9–87.3)**	**55.8 (54.5–57.1)**

Note: CI – confidence interval.

9.3 Medications supplied by GPs

GPs supplied patients with 9,903 medications in 2010–11, at a rate of 10.3 medications per 100 encounters. At least one medication was supplied at 8.0% of encounters for 5.4% of problems. Table 9.3 shows the medications supplied most often at the CAPS generic level (ATC Level 5 equivalent), with vaccines accounting for six out of ten supplied medications.

Table 9.3: Medications most frequently supplied by GPs

Generic medication	Number	Per cent of GP supplied medications (*n* = 9,903)	Rate per 100 encounters (95% CI) (*n* = 95,839)	Rate per 100 problems (95% CI) (*n* = 146,141)
Influenza virus vaccine	2,550	25.7	2.7 (2.2–3.1)	1.7 (1.5–2.0)
Pneumococcal vaccine	574	5.8	0.6 (0.5–0.7)	0.4 (0.3–0.4)
Vitamin B12 (Cobalamin)	366	3.7	0.4 (0.3–0.4)	0.3 (0.2–0.3)
Diphtheria/pertussis/tetanus/hepatitis B/polio/Hib vaccine	357	3.6	0.4 (0.3–0.4)	0.2 (0.2–0.3)
Mumps/measles/rubella vaccine	352	3.6	0.4 (0.3–0.4)	0.2 (0.2–0.3)
Triple antigen (diphtheria/pertussis/tetanus)	321	3.2	0.3 (0.3–0.4)	0.2 (0.2–0.3)
Rotavirus vaccine	240	2.4	0.3 (0.2–0.3)	0.2 (0.1–0.2)
Diphtheria/pertussis/tetanus/polio vaccine	209	2.1	0.2 (0.2–0.3)	0.1 (0.1–0.2)
ADT/CDT (diphtheria/tetanus) vaccine	192	1.9	0.2 (0.2–0.2)	0.1 (0.1–0.2)
Meningitis vaccine	172	1.7	0.2 (0.1–0.2)	0.1 (0.1–0.1)
Haemophilus B vaccine	167	1.7	0.2 (0.1–0.2)	0.1 (0.1–0.1)
Chickenpox (Varicella zoster) vaccine	166	1.7	0.2 (0.1–0.2)	0.1 (0.1–0.1)
Hepatitis B vaccine	142	1.4	0.1 (0.1–0.2)	0.1 (0.1–0.1)
Hepatitis A/Typhoid vaccine (*Salmonella typhi*)	134	1.3	0.1 (0.1–0.2)	0.1 (0.0–0.1)
Hepatitis A vaccine	132	1.3	0.1 (0.1–0.2)	0.1 (0.0–0.1)
Immunization	129	1.3	0.1 (0.1–0.2)	0.1 (0.1–0.1)
Typhoid vaccine (*Salmonella typhi*)	127	1.3	0.1 (0.1–0.2)	0.1 (0.0–0.1)
Allergen treatment	115	1.2	0.1 (0.1–0.2)	0.1 (0.1–0.1)
Metoclopramide	84	0.9	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Esomeprazole	82	0.8	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Betamethasone systemic	81	0.8	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Methylprednisolone	71	0.7	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Hepatitis A and B vaccine	66	0.7	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Medroxyprogesterone	64	0.6	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Budesonide/eformoterol	64	0.6	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Steroid injection NEC	62	0.6	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Meloxicam	59	0.6	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Paracetamol	56	0.6	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Celecoxib	56	0.6	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Testosterone	55	0.6	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Subtotal	*7,243*	*73.1*	—	—
Total supplied medications	**9,903**	**100.0**	**10.3 (9.5–11.2)**	**6.8 (6.2–7.3)**

Note: CI – confidence interval; NEC – not elsewhere classified.

9.4 Medications advised for over-the-counter purchase

The GPs recorded 9,371 medications as recommended for OTC purchase, at rates of 9.8 per 100 encounters and 6.4 per 100 problems managed. At least one OTC medication was recorded as advised at 8.6% of encounters and for 5.8% of problems. Table 9.4 shows the top 30 advised medications at the CAPS generic level (ATC Level 5 equivalent). A wide range of medications was recorded in this group, the most common being paracetamol, which accounted for 26.9% of these medications.

The re-classification of aspirin described in section 9.2 also has an impact on the rate of OTC-advised aspirin, which is lower than that published before 2010. Only the higher-dose analgesic aspirin appears in this table because the frequency of OTC-advised low-dose aspirin for anti-thrombotic purposes was too low for inclusion.

Table 9.4: Most frequently advised over-the-counter medications

Generic medication	Number	Per cent of OTC medications (n = 9,371)	Rate per 100 encounters (95% CI) (n = 95,839)	Rate per 100 problems (95% CI) (n = 146,141)
Paracetamol [plain]	2,519	26.9	2.6 (2.3–2.9)	1.7 (1.5–1.9)
Ibuprofen	549	5.9	0.6 (0.5–0.7)	0.4 (0.3–0.4)
Saline bath/solution/gargle	226	2.4	0.2 (0.2–0.3)	0.2 (0.1–0.2)
Sodium chloride topical nasal	218	2.3	0.2 (0.2–0.3)	0.1 (0.1–0.2)
Loratadine	190	2.0	0.2 (0.2–0.2)	0.1 (0.1–0.2)
Cetirizine	184	2.0	0.2 (0.1–0.2)	0.1 (0.1–0.2)
Ergocalciferol (Vitamin D analogue)	174	1.9	0.2 (0.1–0.2)	0.1 (0.1–0.1)
Diclofenac topical	162	1.7	0.2 (0.1–0.2)	0.1 (0.1–0.1)
Sodium/potassium/citric/glucose	155	1.7	0.2 (0.1–0.2)	0.1 (0.1–0.1)
Clotrimazole topical	131	1.4	0.1 (0.1–0.2)	0.1 (0.1–0.1)
Hydrocortisone/clotrimazole	117	1.2	0.1 (0.1–0.2)	0.1 (0.1–0.1)
Fexofenadine	101	1.1	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Aspirin [analgesic]	89	1.0	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Cold and Flu medication NEC	87	0.9	0.1 (0.0–0.1)	0.1 (0.0–0.1)
Hyoscine butylbromide	85	0.9	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Docusate otic	79	0.8	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Codeine/paracetamol/pseudoephedrine	78	0.8	0.1 (0.0–0.1)	0.1 (0.0–0.1)
Paracetamol/codeine [all]	75	0.8	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Clotrimazole vaginal	74	0.8	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Cream/ointment/lotion NEC	69	0.7	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Multivitamins with minerals	66	0.7	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Cholecalciferol	65	0.7	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Sodium bicarbonate/citrate/tartaric acid	65	0.7	0.1 (0.0–0.1)	0.0 (0.0–0.1)

(continued)

Table 9.4 (continued): Most frequently advised over-the-counter medications

Generic medication	Number	Per cent of OTC medications (*n* = 9,371)	Rate per 100 encounters[(a)] (95% CI) (*n* = 95,839)	Rate per 100 problems[(a)] (95% CI) (*n* = 146,141)
Folic acid	64	0.7	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Simple analgesics	64	0.7	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Hydrocortisone topical	61	0.7	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Loperamide	60	0.6	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Vitamin D	60	0.6	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Sorbolene/glycerol/cetomacrogol	60	0.6	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Codeine phosphate/ibuprofen	57	0.6	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Subtotal	*5,985*	*63.9*	—	—
Total advised medications	**9,371**	**100.0**	**9.8 (9.0–10.5)**	**6.4 (5.9–6.9)**

Note: OTC – over-the-counter medication; CI – confidence interval; NEC – not elsewhere classified.

9.5 Statins prescribed or supplied in 2010–11

Included in this analysis were all HMG CoA reductase inhibitors (ATC code C10AA), commonly called statins, and combination products of statins with other medications (ATC code C10B). The relationships between patients, their reasons for encounter and the problems managed with statins are presented in Figure 9.4. Statins were prescribed or supplied by GPs at a rate of 3.7 per 100 total encounters, and 2.4 per 100 problems managed, and they accounted for 3.5% of all medications recorded. For every 100 problems managed with a statin, 99 statins were prescribed and one was supplied by the GP.

Patient age and sex

While 45–64 year old patients accounted for the largest proportion (42.1%) of patients prescribed/supplied a statin, those aged 65–74 years were the most likely to be prescribed or supplied a statin at encounter (8.3%). At encounters with patients aged 45–64 years, 5.6% included prescription/supply of a statin. No statins were recorded for patients aged less than 24 years. A statin was prescribed at 4.4% of encounters with males, significantly more often than at female encounters (3.1%).

Reasons for encounter

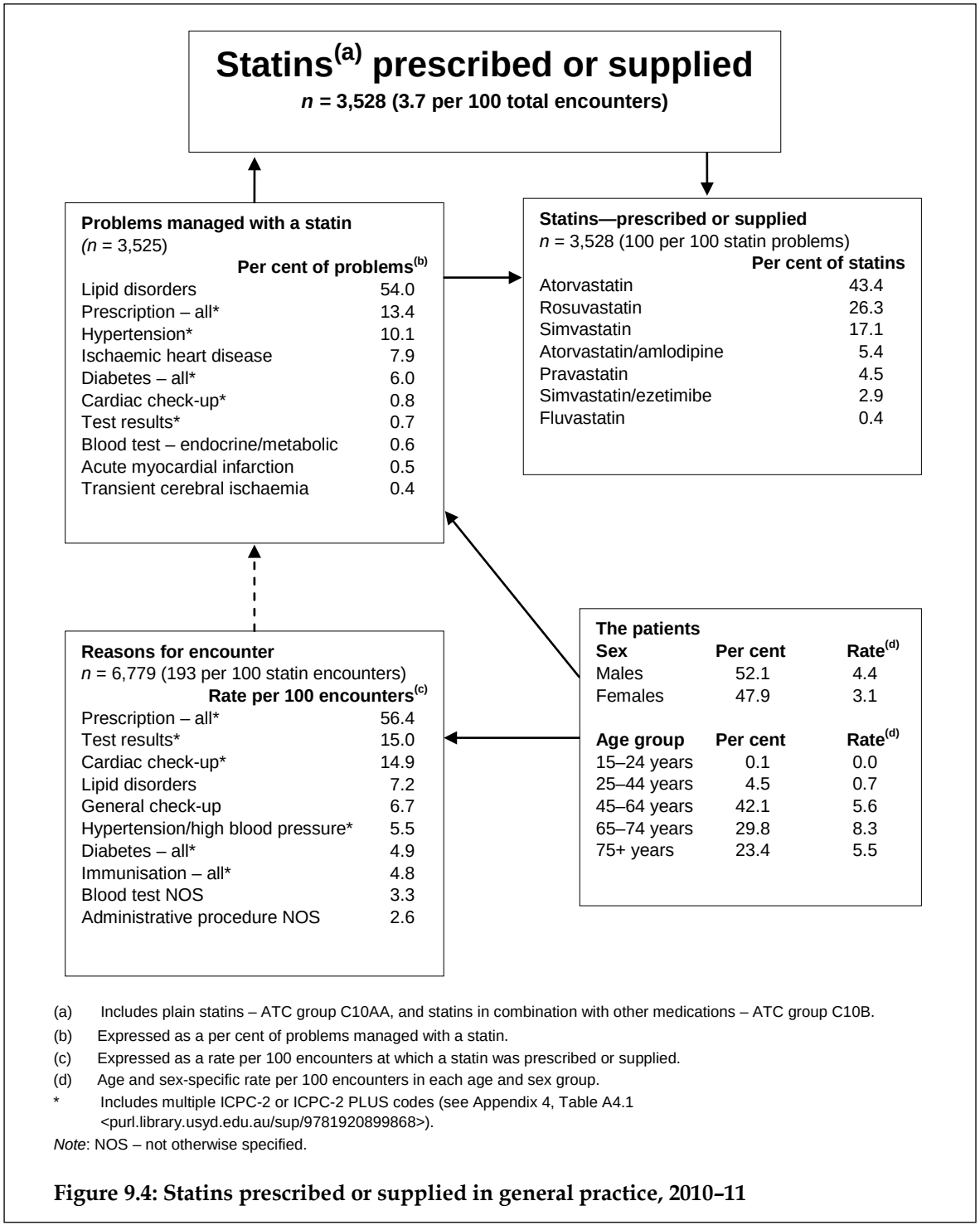
The reason for encounter most often given by patients at encounters where a statin was prescribed or supplied was a prescription request (56.4 per 100 statin encounters). Other common reasons were for test results (15.0 per 100) and for a cardiac check-up (14.9 per 100 statin encounters).

Problems managed with a statin

Lipid disorders accounted for more than half (54.0%) of problems managed with a statin, while the GP labelled the problem under management as prescription request for 13.4%. Hypertension accounted for 10.1% of problems managed with a statin, ischaemic heart disease 7.9%, and diabetes 6.0%.

Individual statins prescribed or supplied

The most frequently prescribed/supplied statin was atorvastatin, which accounted for 43.4% of all statins recorded. The second most common was rosuvastatin, accounting for 26.3%. Simvastatin was also frequently prescribed/supplied, accounting for 17.1% of statins, while the combination product atorvastatin/amlodipine made up 5.4% of statins.



(a) Includes plain statins – ATC group C10AA, and statins in combination with other medications – ATC group C10B.

(b) Expressed as a per cent of problems managed with a statin.

(c) Expressed as a rate per 100 encounters at which a statin was prescribed or supplied.

(d) Age and sex-specific rate per 100 encounters in each age and sex group.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.1 <purl.library.usyd.edu.au/sup/9781920899868>).

Note: NOS – not otherwise specified.

Figure 9.4: Statins prescribed or supplied in general practice, 2010–11

9.6 Changes in medications over the decade 2001–02 to 2010–11

Data on medications are reported for each year from 2001–02 to 2010–11 in Chapter 9 of the companion report entitled *A decade of Australian general practice activity 2001–02 to 2010–11*.[1] In that report, changes over time are measured as change in the management of problems (that is, as a rate per 100 problems). This reflects change in how GPs are managing problems, and takes into account the significant increase in the number of problems managed per encounter over the decade to 2010–11 (see Section 7.9).

The rate at which medications were prescribed fell from 61.3 per 100 problems managed in 2001–02 to 55.8 per 100 in 2010–11. This significant decrease means that in 2010–11 an average 5.5 fewer prescriptions were being written for every 100 problems managed than 10 years earlier. However, in 2010–11 there were 18.2 million (18%) more encounters claimed through Medicare than there were in 2001–02. As a result, the extrapolated national effect of this change is 12.6 million more prescriptions given by GPs in 2010–11 than in 2001–02. If the estimated 26% increase over the 10 years in number of problems managed nationally is considered, the increase in number of prescriptions recorded would have been 21.9 million if not for the decrease in GP prescribing rates.

Among the prescribed drug groups that increased significantly were agents acting on the renin-angiotensin system, serum lipid-reducing agents, psychoanaleptics, anti-thrombotic agents and thyroid medications. At the same time, prescribing rates of several drug groups decreased, including psycholeptics, drugs for obstructive airways disease, systemic anti-inflammatory medications and sex hormones.

At the individual generic level, significant increases were found in the prescribing rates of a number of medications. Among them were oxycodone, esomeprazole, meloxicam and rosuvastatin. On the other hand, roxithromycin, simvastatin, celecoxib and cefaclor were among the medications for which significant decreases in prescribing rates occurred over time.

Other changes that occurred over the 10-year period were a steady rise in the proportion of prescriptions for which five repeats were recorded, and an increase in the rate of medications supplied by GPs (mainly vaccines). Rates of medications recommended by GPs for over-the-counter purchases showed no significant change either in total rates or in the individual medications advised.

10 Other treatments

The BEACH survey form allows GPs to record up to two other (non-pharmacological) treatments for each problem managed at the encounter. Other treatments include all clinical and procedural treatments provided. These groups are defined in Appendix 4, Tables A4.4 and A4.5. Routine clinical measurements or observations, such as measurements of blood pressure and physical examinations, were not included if they were undertaken by the GP. However GPs were instructed to record and indicate clinical measurements or observations if these were undertaken by the practice nurse in conjunction with the GP at the encounter.

In this chapter 'other treatments' are reported, irrespective of whether they were done by the GP or by the practice nurse. That is, the non-pharmacological management provided in general practice patient encounters is described, rather than management provided specifically by the GP. However in the analysis of procedural treatments, injections given in provision of vaccines were removed, as this action has already been counted and reported in medications. Treatments provided by the practice nurse (including the injections given for vaccination) are reported separately in Chapter 13.

Data on other treatments are reported for each year from 2001–02 to 2010–11 in the 10-year summary report *A decade of Australian general practice activity 2001–02 to 2010–11*.[1]

10.1 Number of other treatments

At least one other treatment was provided at 40.1% of all encounters. In 2010–11, a total of 50,235 other treatments were recorded, at a rate of 52.4 per 100 encounters. More than two-thirds (67.7%) of these were clinical treatments. For every 100 problems managed, GPs provided 23.3 clinical treatments and 11.1 procedures (Table 10.1).

Table 10.1: Summary of other treatments

Variable	Number	Rate per 100 encounters (*n* = 95,839)	95% LCL	95% UCL	Rate per 100 problems (*n* = 146,141)	95% LCL	95% UCL
At least one other treatment	38,411	40.1	38.4	41.7	—	—	—
Other treatments	50,235	52.4	49.8	55.1	34.4	32.7	36.0
Clinical treatments	34,019	35.5	33.2	37.8	23.3	21.8	24.8
Procedural treatments	16,216	16.9	16.1	17.8	11.1	10.6	11.6

Note: LCL – lower confidence limit; UCL – upper confidence limit.

Table 10.2 shows the relationship between other treatments and pharmacological treatments given for problems managed.

- In 60.4% of the problems that were managed with an 'other treatment', no concurrent pharmacological treatment was provided.
- At least one clinical treatment was provided in the management of 20.9% of problems. For 59.1% of these problems, no medication was provided.
- At least one procedural treatment was undertaken in the management of 10.4% of problems, with no pharmacological management given for 62.4% of these problems.

Table 10.2: Relationship between other treatments and pharmacological treatments

Co-management of problems with other treatments	Number of problems	Per cent within class	Per cent of problems (*n* = 146,141)	95% LCL	95% UCL
At least one other treatment	44,447	100.0	30.4	29.1	31.7
Without pharmacological treatment	26,843	60.4	18.4	17.6	19.1
At least one clinical treatment	30,507	100.0	20.9	19.6	22.1
Without pharmacological treatment	18,035	59.1	12.3	11.7	13.0
At least one procedural treatment	15,194	100.0	10.4	9.9	10.9
Without pharmacological treatment	9,484	62.4	6.5	6.2	6.8

Note: LCL – lower confidence limit; UCL – upper confidence limit.

10.2 Clinical treatments

Clinical treatments include general and specific advice, counselling or education, and administrative processes. During 2010–11, there were 34,019 clinical treatments recorded, at a rate of 35.5 per 100 encounters, or 23.3 per 100 problems managed (Table 10.1).

Most frequent clinical treatments

Table 10.3 lists the most common clinical treatments provided. Each treatment is expressed as a percentage of all other treatments, as a rate per 100 encounters with 95% confidence limits and as a rate per 100 problems with 95% confidence limits.

General advice and education was the most frequently recorded clinical treatment in 2010–11 (6.0 per 100 encounters), accounting for 16.8% of all clinical treatments. This was followed by counselling about the problem under management (5.3 per 100 encounters), counselling and advice about nutrition and weight (4.0 per 100 encounters), and advice and education about treatment (3.4 per 100 encounters). Psychological counselling was provided at a rate of 3.2 per 100 encounters, and advice and education about medication at 2.7 per 100 encounters (Table 10.3).

Several recorded clinical treatments related to preventive activities. The most common was counselling and advice about nutrition and weight, followed by counselling/advice for exercise, smoking, lifestyle, prevention, and alcohol. Together, these preventive treatments accounted for 21.1% of clinical treatments, provided at a rate of 7.5 per 100 encounters (Table 10.3).

Table 10.3: Most frequent clinical treatments

Clinical treatment	Number	Per cent of clinical treatments (*n* = 34,019)	Rate per 100 encounters (*n* = 95,839)	95% LCL	95% UCL	Rate per 100 problems (*n* = 146,141)	95% LCL	95% UCL
Advice/education NEC*	5,705	16.8	6.0	5.1	6.8	3.9	3.4	4.4
Counselling – problem*	5,088	15.0	5.3	4.4	6.2	3.5	2.9	4.0
Counselling/advice – nutrition/weight*	3,821	11.2	4.0	3.5	4.4	2.6	2.3	2.9
Advice/education – treatment*	3,233	9.5	3.4	2.9	3.8	2.2	1.9	2.5
Counselling – psychological*	3,085	9.1	3.2	3.0	3.5	2.1	1.9	2.3
Advice/education – medication*	2,628	7.7	2.7	2.5	3.0	1.8	1.6	2.0
Other administrative procedure/document (excluding sickness certificate)*	1,822	5.4	1.9	1.7	2.1	1.2	1.1	1.4
Sickness certificate*	1,539	4.5	1.6	1.4	1.8	1.1	0.9	1.2
Counselling/advice – exercise*	1,302	3.8	1.4	1.1	1.6	0.9	0.7	1.0
Reassurance, support	1,280	3.8	1.3	1.1	1.5	0.9	0.7	1.0
Counselling/advice – smoking*	833	2.4	0.9	0.8	1.0	0.6	0.5	0.6
Counselling/advice – life style*	453	1.3	0.5	0.4	0.6	0.3	0.2	0.4
Counselling/advice – prevention*	414	1.2	0.4	0.3	0.5	0.3	0.2	0.4
Counselling/advice – health/body*	388	1.1	0.4	0.3	0.5	0.3	0.2	0.3
Counselling/advice – alcohol*	368	1.1	0.4	0.3	0.4	0.3	0.2	0.3
Family planning*	285	0.8	0.3	0.2	0.3	0.2	0.2	0.2
Observe/wait*	256	0.8	0.3	0.2	0.3	0.2	0.1	0.2
Subtotal	*32,500*	*95.5*	—	—	—	—	—	—
Total clinical treatments	**34,019**	**100.0**	**35.5**	**33.2**	**37.8**	**23.3**	**21.8**	**24.8**

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.4 <purl.library.usyd.edu.au/sup/9781920899868>).

Note: LCL – lower confidence limit; UCL – upper confidence limit; NEC – not elsewhere classified.

Problems managed with clinical treatments

Table 10.4 lists the top 10 problems managed with a clinical treatment. It also shows the extent to which clinical treatments were used for each problem, and the relationship between the use of a clinical treatment and the provision of medication for individual problems at that encounter.

- A total of 30,507 problems (20.9% of all problems) involved one or more clinical treatments in their management.
- The top 10 problems accounted for 30.1% of all problems for which clinical treatments were provided.
- Depression accounted for the most clinical treatments provided for 5.6% of problems managed with clinical treatments, followed by upper respiratory tract infection (5.2%), hypertension (3.4%) and diabetes (3.4%).
- A clinical treatment was provided at 42.4% of depression contacts. Almost half (47%) of these contacts did not involve medication for that problem at that encounter.

- Tobacco abuse was the problem most likely to be managed with clinical treatments (61.3% of contacts). Almost half (45.6%) of tobacco abuse contacts where a clinical treatment was provided did not result in concurrent medication being prescribed/supplied or advised for that problem at that encounter.
- Almost two-thirds (64.1%) of anxiety contacts managed with a clinical treatment had no concurrent pharmacological treatment provided at that encounter for that problem.

Table 10.4: The 10 most common problems managed with a clinical treatment

Problem managed	Number	Per cent of problems with clinical treatment	Rate per 100 encounters[(a)] (*n* = 95,839)	95% LCL	95% UCL	Per cent of this problem[(b)]	Per cent of treated problems no medications[(c)]
Depression*	1,706	5.6	1.8	1.6	1.9	42.4	47.0
Upper respiratory tract infection	1,584	5.2	1.7	1.4	1.9	30.4	51.7
Hypertension*	1,039	3.4	1.1	0.9	1.3	12.5	40.3
Diabetes – all*	1,035	3.4	1.1	1.0	1.2	27.0	59.3
Anxiety*	826	2.7	0.9	0.8	1.0	44.7	64.1
Lipid disorders	735	2.4	0.8	0.7	0.9	25.1	63.0
Gastroenteritis*	655	2.2	0.7	0.6	0.8	48.2	56.7
Back complaint*	564	1.9	0.6	0.5	0.7	21.7	51.5
Tobacco abuse	545	1.8	0.6	0.5	0.6	61.3	45.6
Test results*	484	1.6	0.5	0.4	0.6	26.5	92.0
Subtotal	*9,173*	*30.1*	—	—	—	—	—
Total problems with clinical treatments	**30,507**	**100.0**	**31.8**	**29.8**	**33.8**	**—**	**—**

(a) Rate of provision of clinical treatment for selected problem per 100 total encounters.

(b) Percentage of contacts with this problem that generated at least one clinical treatment.

(c) The numerator is the number of cases of this problem that generated at least one clinical treatment but generated no medications. The denominator is the total number of contacts for this problem that generated at least one clinical treatment (with or without medications).

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.1, <purl.library.usyd.edu.au/sup/9781920899868>).

Note: LCL – lower confidence limit; UCL – upper confidence limit.

10.3 Procedural treatments

Procedural treatments included therapeutic actions and diagnostic procedures undertaken at the encounter. Injections for immunisations/vaccinations (*n* = 4,044) are not counted here as procedures, as these have already been reported as medications (see Chapter 9). There were 16,216 procedural treatments provided in these general practice encounters during 2010–11, at a rate of 16.9 per 100 encounters, or 11.1 per 100 problems (Table 10.1).

Most frequent procedures

Table 10.5 lists the most common procedural treatments provided. Each treatment is expressed as a percentage of all procedural treatments, as a rate per 100 encounters with 95% confidence limits and as a rate per 100 problems with 95% confidence limits.

Some of the procedures (for example INR test, electrical tracings, physical function test) are investigations undertaken at the encounter. These results do not include investigations that were ordered by the GP to be performed by an external provider. A summary of all investigations (both undertaken and ordered) is provided in Table 12.6.

The most frequently recorded group of procedures in 2010–11 were excisions (2.9 per 100 encounters), accounting for 17.0% of all procedural treatments. Other procedural treatments frequently recorded included dressings (2.6 per 100 encounters), local injections (excluding all local injection/infiltrations performed for immunisations) (2.4 per 100 encounters) and rehabilitation (1.2 per 100 encounters) (Table 10.5).

Table 10.5: Most frequent procedural treatments

Procedural treatment	Number	Per cent of procedural treatments (*n* = 16,216)	Rate per 100 encounters (*n* = 95,839)	95% LCL	95% UCL	Rate per 100 problems (*n* = 146,141)	95% LCL	95% UCL
Excision/removal tissue/biopsy/ destruction/debridement/cauterisation*	2,755	17.0	2.9	2.6	3.1	1.9	1.7	2.0
Dressing/pressure/compression/ tamponade*	2,441	15.1	2.6	2.4	2.7	1.7	1.5	1.8
Local injection/infiltration*[(a)]	2,324	14.3	2.4	2.2	2.7	1.6	1.4	1.8
Physical medicine/rehabilitation – all*	1,155	7.1	1.2	1.1	1.4	0.8	0.7	0.9
Incision/drainage/flushing/aspiration/ removal body fluid*	1,154	7.1	1.2	1.1	1.3	0.9	0.7	0.9
Pap smear*	912	5.6	1.0	0.8	1.1	0.6	0.5	0.7
Repair/fixation – suture/cast/prosthetic device (apply/remove)*	815	5.0	0.9	0.8	0.9	0.6	0.5	0.6
Other therapeutic procedures/ minor surgery*	680	4.2	0.7	0.5	0.9	0.5	0.3	0.6
INR test	648	4.0	0.7	0.6	0.8	0.4	0.4	0.5
Other preventive procedures/high-risk medication*	568	3.5	0.6	0.5	0.7	0.4	0.3	0.4
Check-up – practice nurse*	545	3.4	0.6	0.4	0.8	0.4	0.3	0.5
Electrical tracings*	532	3.3	0.6	0.5	0.6	0.4	0.3	0.4
Physical function test*	463	2.9	0.5	0.4	0.6	0.3	0.2	0.4
Subtotal	*14,992*	*92.5*	—	—	—	—	—	—
Total procedural treatments	**16,216**	**100.0**	**16.9**	**16.1**	**17.8**	**11.1**	**10.6**	**11.6**

(a) Excludes all local injection/infiltrations performed for immunisations/vaccinations.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Tables A4.5 and A4.6, <purl.library.usyd.edu.au/sup/9781920899868>).

Note: LCL – lower confidence limit; UCL – upper confidence limit; NEC – not elsewhere classified; INR – international normalised ratio.

Problems managed with a procedural treatment

Table 10.6 lists the top 10 problems managed with a procedural treatment. It also shows the proportion of contacts with each problem that was managed with a procedure, and the proportion of problems managed with a procedure without medication given concurrently.

- One or more procedural treatments were provided in the management of 15,194 problems (10.4% of all problems).
- The top 10 problems accounted for more than a third (34.4%) of all problems for which a procedure was used.
- Female genital check-up/pap smear accounted for the most procedures (5.5% of problems managed with procedures), followed by solar keratosis/sunburn (4.9%), laceration/cut (4.7%) and excessive ear wax (3.6).
- Laceration/cut was the problem most likely to be managed with a procedural treatment with a procedure being undertaken at nearly four-fifths (79.3%) of contacts. Of these contacts where a procedural treatment was provided, 77.7% were not prescribed/supplied or advised a medication for that problem at that encounter.

Table 10.6: The 10 most common problems managed with a procedural treatment

Problem managed	Number	Per cent of problems with procedure	Rate per 100 encounters[(a)] (*n* = 95,839)	95% LCL	95% UCL	Per cent of this problem[(b)]	Per cent of treated problems no medications[(c)]
Female genital check-up/ Pap smear*	835	5.5	0.9	0.8	1.0	50.8	97.3
Solar keratosis/sunburn	744	4.9	0.8	0.7	0.9	68.3	97.1
Laceration/cut	716	4.7	0.8	0.7	0.8	79.3	77.7
Excessive ear wax	539	3.6	0.6	0.5	0.6	70.8	91.1
Malignant neoplasm of skin	485	3.2	0.5	0.4	0.6	45.7	92.6
Warts	449	3.0	0.5	0.4	0.5	75.0	94.7
Chronic ulcer skin (including varicose ulcer)	423	2.8	0.4	0.4	0.5	77.1	80.3
General check-up*	383	2.5	0.4	0.3	0.5	14.9	83.5
Atrial fibrillation/flutter	353	2.3	0.4	0.3	0.4	28.2	72.4
Sprain/strain*	300	2.0	0.3	0.3	0.4	22.5	44.9
Subtotal	*5,228*	*34.4*	—	—	—	—	—
Total problems with procedural treatments	**15,194**	**100.0**	**15.9**	**15.1**	**16.6**	**—**	**—**

(a) Rate of provision of procedural treatment for selected problem per 100 total encounters.

(b) Percentage of contacts with this problem that generated at least one procedural treatment.

(c) The numerator is the number of cases of this problem that generated at least one procedural treatment but generated no medications. The denominator is the total number of contacts (for this problem) that generated at least one procedural treatment (with or without medications).

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.1, <purl.library.usyd.edu.au/sup/9781920899868>).

Note: LCL – lower confidence limit; UCL – upper confidence limit.

10.4 Changes in other treatments over the decade 2001–02 to 2010–11

An overview of changes in other treatments provided in general practice over the decade can be found in Chapter 10 of the companion report *A decade of Australian general practice activity 2001–02 to 2010–11*.[1] In that report, changes over time are measured as change in the management of problems (that is, as a rate per 100 problems). This reflects change in how GPs are managing problems and accounts for the significant increase in the number of problems managed per encounter over the decade (see Section 7.9).

Clinical treatments

In summary, there was a significant decrease in the rate of clinical treatments provided for every 100 problems managed between 2001–02 and 2010–11. In particular, rates of counselling and advice about nutrition and weight, advice and education about treatment, and counselling and advice about exercise all decreased over the past ten years.

While there was a significant decline in the number of clinical treatments given per 100 problems managed over the decade, as more problems were managed per 100 encounters in 2010–11 than in 2001–02 there was no significant change in the total number of clinical treatments provided per 100 encounters.

Overall, there was little change in the total number of problems managed with clinical treatments from 2001–02 to 2010–11. However, there were some significant changes during this time. The rate at which clinical treatments were given in the management of tobacco abuse doubled from 0.3 per 100 encounters in 2001–02 to 0.6 per 100 in 2010–11. We estimate this increase equates to 410,000 more occasions where clinical treatments were provided for tobacco abuse nationally in 2010–11 than a decade earlier. However, this increase in the rate of clinical treatments being given in the management of tobacco abuse was not accompanied by an increase in the overall rate of counselling and advice about smoking.

The increase may also be associated with an increase in the number of tobacco abuse problems being managed by GPs with a clinical procedure whereas in the past, counselling and advice about smoking may have been provided at the same rate but was provided opportunistically in the management of other problems.

Procedural treatments

There was a significant increase in the number of procedures performed between 2001–02 (9.6 per 100 problems) and 2010–11 (11.1 per 100 problems). This increase was reflected in the rates of procedures from the group dressing/pressure/compression/tamponade which rose from 1.3 per 100 problems managed in 2001–02 to 1.7 per 100 problems managed in 2010–11, and in the rate of local injections which doubled from 0.8 per 100 problems in 2001–02 to 1.6 per 100 in 2010–11.

There was also an overall increase in the number of problems managed with procedural treatment from 2001–02 to 2010–11. Female genital check up/pap smear continued to be the most common problem to be managed with a procedure, increasing from 0.6 per 100 total problems managed in 2001–02 to 0.9 per 100 in 2010–11.

11 Referrals and admissions

A referral is defined as the process by which the responsibility for part or all of the care of a patient is temporarily transferred to another health care provider. Only new referrals arising at the encounter were included (that is, continuations were not recorded). For each encounter, GPs could record up to two referrals. These included referrals to medical specialists, allied health services, hospitals for admission or emergency departments.

Data on referrals and admissions are reported for each of the most recent BEACH years from 2001–02 to 2010–11 in the 10-year summary report *A decade of Australian general practice activity 2001–02 to 2010–11*.[1]

11.1 Number of referrals and admissions

Table 11.1 provides a summary of referrals and admissions, and the rates per 100 encounters and per 100 problems managed. The patient was given at least one referral at 13.0% of all encounters, and for 9.2% of all problems managed. There were a total of 13,526 referrals made at a rate of 14.1 per 100 encounters. The most frequent referrals were to medical specialists (8.6 per 100 encounters, 5.6 per 100 problems managed), followed by referrals to allied health services (4.2 per 100 encounters, 2.8 per 100 problems). Very few patients were referred to hospitals, or to the hospital emergency department.

Table 11.1: Summary of referrals and admissions

Variable	Number	Rate per 100 encounters (*n* = 95,839)	95% LCL	95% UCL	Rate per 100 problems (*n* = 146,141)	95% LCL	95% UCL
At least one referral[(a)]	12,486	13.0	12.5	13.5	9.2	8.9	9.5
Referrals	13,526	14.1	13.5	14.7	9.3	8.9	9.6
Medical specialist*	8,248	8.6	8.2	9.0	5.6	5.4	5.9
Allied health services*	4,039	4.2	3.9	4.5	2.8	2.6	2.9
Hospital*	364	0.4	0.3	0.4	0.2	0.2	0.3
Emergency department*	291	0.3	0.3	0.4	0.2	0.2	0.2
Other referrals*	584	0.6	0.5	0.7	0.4	0.3	0.5
Total referrals	**13,526**	**14.1**	**13.5**	**14.7**	**9.3**	**8.9**	**9.6**

(a) Rate per 100 problems for at least one referral is calculated using a numerator of number of individual problems with at least one referral (*n* = 13,461).

* Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 4, Table A4.7, <purl.library.usyd.edu.au/sup/9781920899868>).

Note: LCL – lower confidence limit; UCL – upper confidence limit.

11.2 Most frequent referrals

Table 11.2 shows the medical specialists and allied health service groups to whom GPs most often referred patients. The most common referrals to medical specialist were to surgeons (9.8% of specialist referrals), orthopaedic surgeons (8.3%), dermatologists (8.0%) and ophthalmologists (7.5%).

A little over one-quarter (26.7%) of referrals to allied health services were to physiotherapists, one-fifth (20.7%) were to psychologists, one-tenth (10.4%) to podiatrists or chiropodists, and 8.7% to dentists.

Table 11.2: Most frequent referrals, by type

Professional/organisation	Number	Per cents	Per cent of referral group	Rate per 100 encounters (*n* = 95,839)	95% LCL	95% UCL	Rate per 100 problems (*n* = 146,141)	95% LCL	95% UCL
Medical specialist*	**8,248**	**67.1**	**100.0**	**8.6**	**8.2**	**9.0**	**5.6**	**5.4**	**5.9**
Surgeon	809	6.6	9.8	0.8	0.8	0.9	0.6	0.5	0.6
Orthopaedic surgeon	682	5.5	8.3	0.7	0.6	0.8	0.5	0.4	0.5
Dermatologist	663	5.4	8.0	0.7	0.6	0.8	0.5	0.4	0.5
Ophthalmologist	617	5.0	7.5	0.6	0.6	0.7	0.4	0.4	0.5
Cardiologist	594	4.8	7.2	0.6	0.6	0.7	0.4	0.4	0.4
Gastroenterologist	497	4.0	6.0	0.5	0.5	0.6	0.3	0.3	0.4
Ear, nose and throat	481	3.9	5.8	0.5	0.4	0.6	0.3	0.3	0.4
Gynaecologist	478	3.9	5.8	0.5	0.4	0.6	0.3	0.3	0.4
Urologist	321	2.6	3.9	0.3	0.3	0.4	0.2	0.2	0.3
Neurologist	253	2.1	3.1	0.3	0.2	0.3	0.2	0.1	0.2
Subtotal: top 10 medical specialist referrals	*5,395*	*43.8*	*65.4*	—	—	—	—	—	—
Allied health services*	**4,039**	**32.9**	**100.0**	**4.2**	**3.9**	**4.5**	**2.8**	**2.6**	**2.9**
Physiotherapy	1,079	8.8	26.7	1.1	1.0	1.2	0.7	0.7	0.8
Psychologist	835	6.8	20.7	0.9	0.8	1.0	0.6	0.5	0.6
Podiatrist/chiropodist	422	3.4	10.4	0.4	0.4	0.5	0.3	0.2	0.3
Dentist	350	2.9	8.7	0.4	0.3	0.4	0.2	0.2	0.3
Dietitian/nutritionist	241	2.0	6.0	0.3	0.2	0.3	0.2	0.1	0.2
Audiologist/acoustic testing	104	0.8	2.6	0.1	0.1	0.1	0.1	0.1	0.1
Diabetes education	85	0.7	2.1	0.1	0.1	0.1	0.1	0.0	0.1
Optometrist	82	0.7	2.0	0.1	0.1	0.1	0.1	0.0	0.1
Patient support group	69	0.6	1.7	0.1	0.1	0.1	0.0	0.0	0.1
Counsellor	59	0.5	1.5	0.1	0.0	0.1	0.0	0.0	0.1
Subtotal: top 10 allied health referrals	*3,326*	*27.2*	*82.4*	—	—	—	—	—	—
Subtotal: all referrals listed	*8,721*	*71.0*	—	—	—	—	—	—	—
Total allied health and medical specialist referrals	**12,287**	**100.0**	**—**	**12.8**	**12.3**	**13.4**	**8.4**	**8.1**	**8.7**

* Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 4, Table A4.7, <purl.library.usyd.edu.au/sup/9781920899868>).

Note: AHS – allied health services; LCL – lower confidence limit; UCL – upper confidence limit.

11.3 Problems most often referred

Each referral may have been provided for management of multiple problems, and multiple referrals may have been made in management of a single problem. Therefore, there are more problem–referral links than referrals. Table 11.3 shows the most common problems referred to medical specialists, in decreasing frequency order of problem–referral combinations.

The 8,248 referrals to medical specialists were provided in management of 8,477 problems. The 10 problems most often referred to a specialist accounted for 19.2% of all problem–referral links. Those most often referred were malignant skin neoplasm (2.7% of problem–referral links), pregnancy (2.6%), diabetes (2.5%) and osteoarthritis (2.0%) (Table 11.3). The far right hand column of Table 11.3 shows the likelihood of referral when each problem is managed. The problems (listed above) that were most often referred were also those most likely to be referred.

Table 11.3: The 10 problems most frequently referred to a medical specialist

Problem managed	Number	Per cent of problem–referral links	Rate per 100 encounters (*n* = 95,839)	95% LCL	95% UCL	Rate per 100 contacts of this problem[(a)]
Malignant skin neoplasm	229	2.7	0.2	0.2	0.3	21.7
Pregnancy*	224	2.6	0.2	0.2	0.3	16.3
Diabetes – all*	211	2.5	0.2	0.2	0.3	5.5
Osteoarthritis*	170	2.0	0.2	0.1	0.2	6.6
Ischaemic heart disease*	154	1.8	0.2	0.1	0.2	14.1
Sleep disturbance	139	1.6	0.1	0.1	0.2	9.6
Abnormal test results*	136	1.6	0.1	0.1	0.2	13.1
Oesophageal disease	135	1.6	0.1	0.1	0.2	6.1
Other referrals NOS	118	1.4	0.1	0.1	0.2	62.7
Back complaint*	117	1.4	0.1	0.1	0.1	4.5
Subtotal: top 10 problems referred to a medical specialist	*1,633*	*19.3*	—	—	—	—
Total problems referred to medical specialist	**8,477**	**100.0**	**8.8**	**8.5**	**9.2**	**—**

(a) The rate of referrals to medical specialists per 100 contacts with the problem.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.1 <purl.library.usyd.edu.au/sup/9781920899868>).

Note: LCL – lower confidence limit; UCL – upper confidence limit; NOS – not otherwise specified.

The 4,039 referrals to an allied health service were provided in the management of 4,188 problems. The 10 most common of these accounted for 46.4% of all problem–referral links. Depression was the problem most frequently referred to an allied health service (11.4% of problem–referral links). However, the problem most likely to result in a referral to an allied health service was teeth/gum disease, with almost one-third (30.7%) of all contacts resulting in a referral (Table 11.4).

Table 11.4: The 10 problems most frequently referred to allied health services

Problem managed	Number	Per cent of problem–referral links	Rate per 100 encounters (*n* = 95,839)	95% LCL	95% UCL	Rate per 100 contacts of this problem[(a)]
Depression*	478	11.4	0.5	0.4	0.6	11.9
Diabetes – all*	311	7.4	0.3	0.3	0.4	8.1
Back complaint*	237	5.7	0.2	0.2	0.3	9.1
Anxiety*	176	4.2	0.2	0.2	0.2	9.5
Sprain/strain*	167	4.0	0.2	0.1	0.2	12.5
Osteoarthritis*	167	4.0	0.2	0.1	0.2	6.4
Teeth/gum disease	142	3.4	0.1	0.1	0.2	30.7
Administrative procedure NOS	116	2.8	0.1	0.1	0.2	11.6
Bursitis/tendonitis/synovitis NOS	80	1.9	0.1	0.1	0.1	7.9
Acute stress reaction	71	1.7	0.1	0.1	0.1	12.3
Subtotal: top 10 problems referred to AHS	*1,944*	*46.4*	—	—	—	—
Total problems referred to AHS	**4,188**	**100.0**	**4.4**	**4.1**	**4.7**	**—**

(a) The rate of referrals to allied health services per 100 contacts with the problem.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.1, <purl.library.usyd.edu.au/sup/9781920899868>).

Note: LCL – lower confidence limit; UCL – upper confidence limit; NOS – not otherwise specified; AHS – allied health service.

The 364 referrals to a hospital were provided in the management of 386 problems. The 10 problems most frequently referred to hospital are shown in Table 11.5. Pregnancy was the most common. However, appendicitis was the problem most likely to be referred.

Table 11.5: The 10 problems most frequently referred to hospital

Problem managed	Number	Per cent of problem–referral links	Rate per 100 encounters (*n* = 95,839)	95% LCL	95% UCL	Rate per 100 contacts of this problem[(a)]
Pregnancy*	25	6.5	0.03	0.01	0.04	1.8
Digestive system disease, other	14	3.7	0.02	0.01	0.02	5.2
Ischaemic heart disease*	11	2.7	0.01	0.00	0.02	1.0
Appendicitis	10	2.5	0.01	0.00	0.02	22.0
Fracture*	9	2.4	0.01	0.00	0.02	1.1
Pneumonia	9	2.3	0.01	0.00	0.02	2.7
Chest pain, NOS	9	2.3	0.01	0.00	0.02	3.1
Acute bronchitis/bronchiolitis	8	2.1	0.01	0.00	0.02	0.3
Boil/carbuncle	8	2.0	0.01	0.00	0.02	1.3
Diabetes–all*	8	2.0	0.01	0.00	0.02	0.2
Subtotal: top 10 problems referred for admission	*111*	*28.6*	—	—	—	—
Total problems referred to hospital	**386**	**100.0**	**0.40**	**0.33**	**0.47**	**—**

(a) The rate of referrals to hospital per 100 contacts with the problem.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.1, <purl.library.usyd.edu.au/sup/9781920899868>).

Note: LCL – lower confidence limit; UCL – upper confidence limit.

The 291 referrals to an emergency department were provided in the management of 315 problems. The 10 problems most frequently referred to an emergency department are shown in Table 11.6. Fracture was the most common. However, appendicitis was the problem most likely to be referred.

Table 11.6: The 10 problems most frequently referred to an emergency department

Problem managed	Number	Per cent of problem–referral links	Rate per 100 encounters (*n* = 95,839)	95% LCL	95% UCL	Rate per 100 contacts of this problem[(a)]
Fracture*	15	4.8	0.02	0.01	0.03	1.7
Appendicitis	13	4.1	0.01	0.01	0.02	29.3
Abdominal pain*	12	3.8	0.01	0.01	0.02	1.8
Ischaemic heart disease*	9	2.8	0.01	0.00	0.02	0.8
Skin infection, other	9	2.8	0.01	0.00	0.02	2.6
Pneumonia	8	2.7	0.01	0.00	0.02	2.4
Gastroenteritis*	8	2.6	0.01	0.00	0.02	0.6
Boil/carbuncle	7	2.4	0.01	0.00	0.01	1.3
Chest pain NOS	7	2.3	0.01	0.00	0.01	2.5
Urinary tract infection*	7	2.2	0.01	0.00	0.01	0.4
Subtotal: top 10 problems referred to emergency department	*96*	*30.4*	—	—	—	—
Total problems referred to emergency department	**315**	**100.0**	**0.33**	**0.27**	**0.38**	**—**

(a) The rate of referrals to an emergency department per 100 contacts with the problem.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.1, <purl.library.usyd.edu.au/sup/9781920899868>).

Note: LCL – lower confidence limit; UCL – upper confidence limit; NOS – not otherwise specified.

11.4 Changes in referrals over the decade 2001–02 to 2010–11

An overview of changes in referrals over the decade can be found in Chapter 11 of the companion report *A decade of Australian general practice activity 2001–02 to 2010–11*.[1] In that report, changes over time are measured as change in the management of problems (that is, as a rate per 100 problems). This reflects change in how GPs are managing problems, and accounts for the significant increase in the number of problems managed per encounter over the decade (see Section 7.9).

In summary, over the 10 years there was a significant increase in the proportion of problems that were referred to other health providers: in 2001–02 at least one referral was made in the management of 7.3% of problems and this increased to 9.2% of problems managed in 2010–11. Referrals to medical specialists significantly rose from 5.1 to 5.6 per 100 problems managed, reflected in marginal increases in referrals to cardiologists, gastroenterologists and urologists. However, referrals to allied health services rose far more, from 1.6 to 2.8 per 100 problems managed (a 75% increase). This was reflected in significant increases in referral rates to psychologists, podiatrist or chiropodists, dentists, and marginal increases in the rate of referral to dietitians or nutritionists, and physiotherapists per 100 problems.

12 Investigations

The GPs participating in the study were asked to record (in free text) any pathology, imaging or other tests ordered or undertaken at the encounter, and to nominate the patient problem(s) associated with each test order placed. This allows the linkage of test orders to a single problem or multiple problems. Up to five orders for pathology, and two for imaging and other tests could be recorded at each encounter. A single test may have been ordered for the management of multiple problems, and multiple tests may have been used in the management of a single problem.

A pathology test order may be for a single test (for example, Pap smear, HbA1c) or for a battery of tests (for example, lipids, full blood count). Where a battery of tests was ordered, the battery name was recorded rather than each individual test. GPs also recorded the body site for any imaging ordered (for example, x-ray chest, CT head).

Data on investigations are reported for each year from 2001–02 to 2010–11 in the 10-year summary report *A decade of Australian general practice activity 2001–02 to 2010–11*.[1]

12.1 Number of investigations

Table 12.1 shows the number of encounters and problems at which a pathology or imaging test was ordered. There were no tests recorded at a large majority (76.2%) of encounters.

At least one pathology test order was recorded at 17.8% of encounters (for 13.3% of problems managed), and at least one imaging test was ordered at 8.4% of encounters (for 5.7% of problems managed).

Table 12.1: Number of encounters and problems for which pathology or imaging was ordered

Pathology/imaging test ordered	Number of encounters	Per cent of encounters (*n* = 95,839)	95% LCL	95% UCL	Number of problems	Per cent of problems (*n* = 146,141)	95% LCL	95% UCL
Pathology and imaging ordered	2,309	2.4	2.2	2.6	1,658	1.1	1.0	1.2
Pathology only ordered	14,763	15.4	14.9	15.9	17,835	12.2	11.8	12.6
Imaging only ordered	5,700	5.9	5.7	6.2	6,657	4.6	4.4	4.7
No pathology or imaging tests ordered	73,067	76.2	75.5	76.9	119,991	82.1	81.6	82.6
At least one pathology ordered	17,072	17.8	17.2	18.4	19,493	13.3	12.9	13.7
At least one imaging ordered	8,009	8.4	8.0	8.7	8,315	5.7	5.5	5.9
At least one other investigation ordered	675	0.7	0.6	0.8	680	0.5	0.4	0.5
At least one other investigation performed in the practice	1,173	1.2	1.1	1.4	1,184	0.8	0.7	0.9
At least one other investigation ordered or performed	1,811	1.9	1.7	2.1	1,830	1.3	1.1	1.4

Note: LCL – lower confidence limit; UCL – upper confidence limit.

12.2 Pathology ordering

A report on changes in pathology ordering by GPs from 1998 to 2001 was produced in 2003.[15] A review of GP pathology orders in the National Health Priority Areas and other selected problems between 2000 and 2008 is reported in *General practice in Australia, health priorities and policies 1998 to 2008*.[12] A report *Evidence-practice gap in pathology test ordering: a comparison of BEACH pathology data and recommended testing* was produced by the FMRC for the Australian Government Quality Use of Pathology Program in June 2009.[14] Readers may wish to consider those reports in conjunction with the information presented below.

Nature of pathology orders at encounter

The GPs recorded 43,313 orders for pathology tests/batteries of tests, at a rate of 45.2 per 100 encounters or 29.6 per 100 problems managed. The pathology tests recorded were grouped according to the categories set out in Appendix 4, Table A4.8. The main pathology groups reflect those used by Medicare Australia.[70]

The distribution of pathology tests by MBS group, and the most common tests within each group are presented in Table 12.2. Each group and individual test is expressed as a percentage of all pathology tests, as a percentage of the group, as a rate per 100 encounters and as a rate per 100 problems with 95% confidence limits.

Test orders classed as chemistry accounted for more than half of all pathology test orders, the most common being: lipid tests, for which there were 4.0 orders per 100 encounters and 2.6 per 100 problems; electrolytes, urea and creatinine (3.3; 2.2); liver function (2.9; 1.9); and thyroid function tests (2.6 per 100 encounters; 1.7 per 100 problems). Haematology tests accounted for 17.8% of all pathology including the most frequently ordered individual pathology test, full blood count, at 14.7% of all pathology and 6.2 orders per 100 encounters and 4.1 per 100 problems managed. Microbiology accounted for 14.4% of pathology orders, with urine microscopy, culture and sensitivity were the most frequent test in the group at 1.9 tests per 100 patient encounters and 1.2 per 100 problems managed.

Table 12.2: Pathology orders by MBS pathology groups and most frequent individual test orders within group

Pathology test ordered	Number	Per cent of all pathology	Per cent of group	Rate per 100 encounters (*n* = 95,839)	95% LCL	95% UCL	Rate per 100 problems (*n* = 146,141)	95% LCL	95% UCL
Chemistry*	**25,094**	**57.9**	**100.0**	**26.2**	**25.0**	**27.4**	**17.2**	**16.5**	**17.9**
Lipids*	3,802	8.8	15.2	4.0	3.7	4.2	2.6	2.5	2.8
Electrolytes, urea and creatinine*	3,194	7.4	12.7	3.3	3.1	3.6	2.2	2.0	2.4
Liver function*	2,818	6.5	11.2	2.9	2.7	3.2	1.9	1.8	2.1
Thyroid function*	2,470	5.7	9.8	2.6	2.4	2.8	1.7	1.6	1.8
Multibiochemical analysis*	2,252	5.2	9.0	2.3	2.1	2.6	1.5	1.4	1.7
Glucose/glucose tolerance*	2,180	5.0	8.7	2.3	2.1	2.5	1.5	1.4	1.6
Chemistry; other*	1,372	3.2	5.5	1.4	1.3	1.6	0.9	0.8	1.0
Ferritin*	1,294	3.0	5.2	1.3	1.2	1.5	0.9	0.8	1.0
HbA1c*	1,205	2.8	4.8	1.3	1.1	1.4	0.8	0.7	0.9
Prostate specific antigen*	939	2.2	3.7	1.0	0.9	1.1	0.6	0.6	0.7

(continued)

Table 12.2 (continued): Pathology orders by MBS pathology groups and most frequent individual test orders within group

Pathology test ordered	Number	Per cent of all pathology	Per cent of group	Rate per 100 encounters (*n* = 95,839)	95% LCL	95% UCL	Rate per 100 problems (*n* = 146,141)	95% LCL	95% UCL
C reactive protein	850	2.0	3.4	0.9	0.8	1.0	0.6	0.5	0.7
Calcium/phosphate/magnesium*	779	1.8	3.1	0.8	0.7	0.9	0.5	0.5	0.6
Haematology*	**7,719**	**17.8**	**100.0**	**8.1**	**7.6**	**8.5**	**5.3**	**5.0**	**5.5**
Full blood count*	5,947	13.7	77.0	6.2	5.9	6.5	4.1	3.9	4.3
Erythrocyte sedimentation rate	812	1.9	10.5	0.8	0.7	1.0	0.6	0.5	0.6
Coagulation*	726	1.7	9.4	0.8	0.7	0.9	0.5	0.4	0.6
Microbiology*	**6,219**	**14.4**	**100.0**	**6.5**	**6.0**	**7.0**	**4.3**	**3.9**	**4.6**
Urine M,C&S*	1,800	4.2	28.9	1.9	1.7	2.0	1.2	1.1	1.3
Microbiology; other*	871	2.0	14.0	0.9	0.8	1.0	0.6	0.5	0.7
Hepatitis serology*	530	1.2	8.5	0.6	0.5	0.7	0.4	0.3	0.4
Faeces M,C&S*	431	1.0	6.9	0.4	0.4	0.5	0.3	0.3	0.3
Chlamydia*	345	0.8	5.5	0.4	0.3	0.4	0.2	0.2	0.3
Venereal disease*	339	0.8	5.5	0.4	0.3	0.4	0.2	0.2	0.3
Vaginal swab M,C&S*	320	0.7	5.1	0.3	0.3	0.4	0.2	0.2	0.3
HIV*	264	0.6	4.2	0.3	0.2	0.4	0.2	0.1	0.2
Cytopathology*	**1,601**	**3.7**	**100.0**	**1.7**	**1.5**	**1.8**	**1.1**	**1.0**	**1.2**
Pap smear*	1,567	3.6	97.9	1.6	1.5	1.8	1.1	1.0	1.2
Other NEC*	**833**	**1.9**	**100.0**	**0.9**	**0.7**	**1.0**	**0.6**	**0.5**	**0.7**
Blood test	401	0.9	48.1	0.4	0.3	0.5	0.3	0.2	0.3
Other test	268	0.6	32.2	0.3	0.2	0.3	0.2	0.1	0.2
Tissue pathology*	**591**	**1.4**	**100.0**	**0.6**	**0.5**	**0.7**	**0.4**	**0.3**	**0.5**
Histology; skin	523	1.2	88.5	0.5	0.5	0.6	0.4	0.3	0.4
Immunology*	**788**	**1.8**	**100.0**	**0.8**	**0.7**	**0.9**	**0.5**	**0.5**	**0.6**
Immunology, other*	423	1.0	53.7	0.4	0.4	0.5	0.3	0.3	0.3
Anti-nuclear antibodies	146	0.3	18.5	0.2	0.1	0.2	0.1	0.1	0.1
Rheumatoid factor	123	0.3	15.6	0.1	0.1	0.2	0.1	0.1	0.1
Simple tests*	**216**	**0.5**	**100.0**	**0.2**	**0.2**	**0.3**	**0.1**	**0.1**	**0.2**
Infertility/pregnancy*	**253**	**0.6**	**100.0**	**0.3**	**0.2**	**0.3**	**0.2**	**0.1**	**0.2**
Total pathology tests	**43,313**	**100.0**	**—**	**45.2**	**43.4**	**47.0**	**29.6**	**28.6**	**30.7**

* Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 4, Table A4.8, <purl.library.usyd.edu.au/sup/9781920899868>).

Note: LCL – lower confidence limit; UCL – upper confidence limit; M,C&S – microscopy, culture and sensitivity; HIV – human immunodeficiency virus; NEC – not elsewhere classified.

Problems for which pathology tests were ordered

Table 12.3 describes the most common problems for which pathology was ordered, in decreasing frequency order of problem–pathology combinations. Diabetes, accounting for 7.6%of all problem–pathology combinations, followed by hypertension, general check-ups and lipid disorders were the most common problems for which pathology tests were ordered. The two right-hand columns show the proportion of each problem that resulted in a pathology order, and the rate of pathology tests/batteries of tests per 100 specified problems when at least one test is ordered. For example, 30.9% of contacts with diabetes resulted in pathology orders, and when pathology was ordered for diabetes, 290 tests/batteries of tests were ordered per 100 diabetes contacts that resulted in a pathology test order. In contrast, only 11.2% of contacts with hypertension problems resulted in a pathology test, but the resulting test orders accounted for almost as many tests (5.9%) as did diabetes.

Table 12.3: The 10 problems for which pathology was most frequently ordered

Problem managed	Number of problems	Number of problem–pathology combinations[(a)]	Per cent of problem–pathology combinations[(a)]	Per cent of problems with test[(b)]	Rate of pathology orders per 100 problems with pathology[(c)]
Diabetes – all*	3,826	3,426	7.6	30.9	289.5
Hypertension*	8,314	2,656	5.9	11.2	284.2
General check-up*	2,572	2,391	5.3	27.4	338.7
Lipid disorders	2,931	1,774	3.9	27.4	221.1
Weakness/tiredness	635	1,623	3.6	66.0	387.6
Female genital check-up/Pap smear*	1,645	1,517	3.4	75.7	121.8
Blood test NOS	383	1,131	2.5	85.7	344.8
Urinary tract infection*	1,730	1,130	2.5	55.4	118.0
Pregnancy*	1,377	994	2.2	33.2	217.4
Abnormal test results*	1,067	864	1.9	48.6	166.7
Subtotal	*24,445*	*17,500*	*38.8*	—	—
Total problems	**146,141**	**45,185**	**100.0**	**13.3**	**231.8**

(a) A test was counted more than once if it was ordered for the management of more than one problem at an encounter. There were 43,313 pathology test orders and 45,185 problem–pathology combinations.

(b) The percentage of total contacts with the problem that generated at least one order for pathology.

(c) The rate of pathology orders placed per 100 tested problem contacts with at least one order for pathology.

* Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 4, Table A4.1, <purl.library.usyd.edu.au/sup/9781920899868>).

Note: NOS – not otherwise specified.

12.3 Imaging ordering

Readers wanting a more detailed study of imaging orders should consult the comprehensive report on imaging orders by GPs in Australia in 1999–00, written by the FMRC using BEACH data, and published by the AIHW and the University of Sydney in 2001.[71]

Nature of imaging orders at encounter

There were 9,370 imaging test orders recorded, at a rate of 9.8 per 100 encounters and 6.4 per 100 problems managed.

The distribution of imaging tests by MBS group, and the most common tests within each group are presented in Table 12.4. Each group and individual test is expressed as a percentage of all imaging tests, as a percentage of the group, as a rate per 100 encounters, and as a rate per 100 problems with 95% confidence limits. Diagnostic radiology accounted for almost half (47.2%) of all imaging test orders, and ultrasound accounted for 39.2%.

Table 12.4: Imaging orders by MBS imaging groups and the most frequent imaging tests ordered within group

Imaging test ordered	Number	Per cent of all imaging	Per cent of group	Rate per 100 encounters (*n* = 95,839)	95% LCL	95% UCL	Rate per 100 problems (*n* = 146,141)	95% LCL	95% UCL
Diagnostic radiology*	**4,426**	**47.2**	**100.0**	**4.6**	**4.4**	**4.9**	**3.0**	**2.9**	**3.2**
X-ray; chest	978	10.4	22.1	1.0	0.9	1.1	0.7	0.6	0.7
X-ray; knee	475	5.1	10.7	0.5	0.4	0.6	0.3	0.3	0.4
Mammography; female	336	3.6	7.6	0.4	0.3	0.4	0.2	0.2	0.3
X-ray; foot/feet	259	2.8	5.9	0.3	0.2	0.3	0.2	0.2	0.2
X-ray; shoulder	249	2.7	5.6	0.3	0.2	0.3	0.2	0.1	0.2
X-ray; hip	236	2.5	5.3	0.2	0.2	0.3	0.2	0.1	0.2
Test; densitometry	226	2.4	5.1	0.2	0.2	0.3	0.2	0.1	0.2
X-ray; ankle	185	2.0	4.2	0.2	0.2	0.2	0.1	0.1	0.2
X-ray; wrist	169	1.8	3.8	0.2	0.1	0.2	0.1	0.1	0.1
X-ray; hand	140	1.5	3.2	0.1	0.1	0.2	0.1	0.1	0.1
X-ray; spine; lumbosacral	103	1.1	2.3	0.1	0.1	0.1	0.1	0.1	0.1
X-ray; spine; lumbar	92	1.0	2.1	0.1	0.1	0.1	0.1	0.0	0.1
X-ray; spine; cervical	92	1.0	2.1	0.1	0.1	0.1	0.1	0.0	0.1
X-ray; abdomen	91	1.0	2.1	0.1	0.1	0.1	0.1	0.0	0.1
X-ray; finger(s)/thumb	83	0.9	1.9	0.1	0.1	0.1	0.1	0.0	0.1
X-ray; spine; thoracic	68	0.7	1.5	0.1	0.1	0.1	0.0	0.0	0.1
Ultrasound*	**3,671**	**39.2**	**100.0**	**3.8**	**3.6**	**4.0**	**2.5**	**2.4**	**2.6**
Ultrasound; pelvis	575	6.1	15.7	0.6	0.5	0.7	0.4	0.3	0.4
Ultrasound; abdomen	407	4.3	11.1	0.4	0.4	0.5	0.3	0.2	0.3
Ultrasound; shoulder	390	4.2	10.6	0.4	0.4	0.5	0.3	0.2	0.3
Ultrasound; breast; female	315	3.4	8.6	0.3	0.3	0.4	0.2	0.2	0.2
Ultrasound; obstetric	257	2.7	7.0	0.3	0.2	0.3	0.2	0.1	0.2

(continued)

Table 12.4 (continued): Imaging orders by MBS imaging groups and the most frequent imaging tests ordered within group

Imaging test ordered	Number	Per cent of all imaging	Per cent of group	Rate per 100 encounters (*n* = 95,839)	95% LCL	95% UCL	Rate per 100 problems (*n* = 146,141)	95% LCL	95% UCL
Echocardiography	134	1.4	3.7	0.1	0.1	0.2	0.1	0.1	0.1
Test; Doppler	126	1.3	3.4	0.1	0.1	0.2	0.1	0.1	0.1
Ultrasound; kidney	123	1.3	3.4	0.1	0.1	0.2	0.1	0.1	0.1
Ultrasound; leg	97	1.0	2.6	0.1	0.1	0.1	0.1	0.1	0.1
Ultrasound; thyroid	86	0.9	2.3	0.1	0.1	0.1	0.1	0.0	0.1
Ultrasound; knee	85	0.9	2.3	0.1	0.1	0.1	0.1	0.0	0.1
Ultrasound; scrotum	80	0.9	2.2	0.1	0.1	0.1	0.1	0.0	0.1
Ultrasound; foot/toe(s)	77	0.8	2.1	0.1	0.1	0.1	0.1	0.0	0.1
Test; Doppler carotid	75	0.8	2.0	0.1	0.1	0.1	0.1	0.0	0.1
Computerised tomography*	**1,058**	**11.3**	**100.0**	**1.1**	**1.0**	**1.2**	**0.7**	**0.7**	**0.8**
CT scan; brain	153	1.6	14.5	0.2	0.1	0.2	0.1	0.1	0.1
CT scan; abdomen	132	1.4	12.5	0.1	0.1	0.2	0.1	0.1	0.1
CT scan; spine; lumbar	121	1.3	11.4	0.1	0.1	0.2	0.1	0.1	0.1
CT scan; head	103	1.1	9.7	0.1	0.1	0.1	0.1	0.1	0.1
CT scan; chest	95	1.0	9.0	0.1	0.1	0.1	0.1	0.0	0.1
CT scan; sinus	73	0.8	6.9	0.1	0.1	0.1	0.0	0.0	0.1
CT scan; spine; lumbosacral	60	0.6	5.7	0.1	0.0	0.1	0.0	0.0	0.1
Magnetic resonance imaging	127	1.4	100.0	0.1	0.1	0.2	0.1	0.1	0.1
Nuclear medicine*	88	0.9	100.0	0.1	0.1	0.1	0.1	0.0	0.1
Total imaging tests	**9,370**	**100.0**	**—**	**9.8**	**9.4**	**10.2**	**6.4**	**6.1**	**6.7**

* Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 4, Table A4.9 <purl.library.usyd.edu.au/sup/9781920899868>).

Note: LCL – lower confidence limit; UCL – upper confidence limit; CT – computerised tomography.

Problems for which imaging tests were ordered

Table 12.5 lists the most common problems for which imaging was ordered, in decreasing frequency order of problem–imaging combinations. The most common was osteoarthritis, accounting for 5.2% of orders, followed by back complaint (4.6%), and sprain/strain (3.8%). The two right-hand columns show the proportion of each problem that resulted in an imaging test, and the rate of imaging tests per 100 specified problems when at least one test was ordered. For example, 33.8% of contacts with fractures resulted in an imaging test, and 109.7 tests were ordered per 100 fracture contacts when at least one test was ordered.

Table 12.5: The 10 problems for which an imaging test was most frequently ordered

Problem managed	Number of problems	Number of problem–imaging combinations[(a)]	Per cent of problem–imaging combinations	Per cent of problems with test[(b)]	Rate of imaging orders per 100 problems with imaging[(c)]
Osteoarthritis*	2,590	491	5.2	16.9	112.2
Back complaint*	2,599	434	4.6	14.8	112.9
Sprain/strain*	1,335	364	3.8	22.5	121.4
Pregnancy*	1,377	363	3.8	25.8	102.2
Fracture*	892	330	3.5	33.8	109.7
Abdominal pain*	656	277	2.9	37.0	114.3
Bursitis/tendonitis/synovitis NOS	1,019	276	2.9	22.8	118.8
Injury musculoskeletal NOS	721	257	2.7	30.9	115.3
Shoulder syndrome	504	217	2.3	32.2	133.4
Breast lump/mass (female)	179	191	2.0	72.3	147.4
Subtotal	*11,872*	*3200*	*33.7*	—	—
Total problems	**146,141**	**9,472**	**100.0**	**5.7**	**113.9**

(a) A test was counted more than once if it was ordered for the management of more than one problem at an encounter. There were 9,370 imaging test orders and 9,472 problem–imaging combinations.

(b) The percentage of total contacts with the problem that generated at least one order for imaging.

(c) The rate of imaging orders placed per 100 tested problem contacts with at least one order for imaging.

* Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 4, Table A4.1 <purl.library.usyd.edu.au/sup/9781920899868>).

Note: NOS – not otherwise specified.

12.4 Other investigations

Other investigations include diagnostic procedures ordered by the GP at the encounter or undertaken by the GP or practice staff. GPs ordered 697 other investigations during the study year, and GPs or practice staff undertook 1,247 other investigations. There were, in total, 1,944 other investigations either ordered or undertaken in the practice (Table 12.6).

The first part of Table 12.6 lists the other investigations ordered by GPs. The second part lists the other investigations undertaken in the practice by GPs or practice staff. The third part lists total other investigations either ordered or undertaken in the practice. Each investigation is expressed as a percentage of total other investigations ordered or undertaken, as a rate per 100 encounters, and as a rate per 100 problems, each with 95% confidence limits. Electrical tracings were the most common group of other investigations ordered or undertaken making up 44.5% of other investigations followed by physical function test (32.5%).

Table 12.6: Other investigations ordered by GPs or performed in the practice

	Investigations ordered by the GP				Investigations undertaken in the practice				All investigation (ordered or undertaken)			
Investigation ordered	**Number**	**Per cent**	**Rate per 100 encounters (95% CI) (*n* = 95,839)**	**Rate per 100 problems (95% CI) (*n* = 146,141)**	**Number**	**Per cent**	**Rate per 100 encounters (95% CI) (*n* = 95,839)**	**Rate per 100 problems (95% CI) (*n* = 146,141)**	**Number**	**Per cent**	**Rate per 100 encounters (95% CI) (*n* = 95,839)**	**Rate per 100 problems (95% CI) (*n* = 146,141)**
Electrical tracings*	333	47.8	0.35 (0.30–0.40)	0.23 (0.20–0.26)	532	42.7	0.56 (0.48–0.63)	0.36 (0.31–0.42)	866	44.5	0.90 (0.81–1.00)	0.59 (0.53–0.65)
Diagnostic endoscopy*	176	25.3	0.18 (0.15–0.22)	0.12 (0.10–0.15)	463	37.1	0.48 (0.36–0.61)	0.32 (0.24–0.40)	632	32.5	0.66 (0.53–0.79)	0.43 (0.35–0.52)
Physical function test*	169	24.2	0.18 (0.14–0.21)	0.12 (0.09–0.14)	236	18.9	0.25 (0.15–0.34)	0.16 (0.10–0.22)	255	13.1	0.27 (0.17–0.36)	0.17 (0.11–0.24)
Other diagnostic procedures*	18	2.6	0.02 (0.01–0.03)	0.01 (0.01–0.02)	16	1.3	0.02 (0.01–0.03)	0.01 (0.00–0.02)	192	9.9	0.20 (0.16–0.24)	0.13 (0.11–0.16)
Total other investigations ordered	**697**	**100.0**	0.73 (0.65–0.80)	0.48 (0.43–0.52)	**1,247**	**100.0**	1.30 (1.11–1.49)	0.85 (0.73–0.98)	**1,944**	**100.0**	2.03 (1.82–2.23)	1.33 (1.20–1.46)

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.6 <purl.library.usyd.edu.au/sup/9781920899868>).

Note: LCL – lower confidence limit; UCL – upper confidence limit.

12.5 Lipid tests

Lipid tests have become the chemistry test most frequently ordered by Australian GPs and the second most frequently ordered test overall after full blood counts. Lipid tests accounted for 8.8% of all pathology and 15.2% of all chemistry. Lipid tests were ordered at 3,639 encounters for the management of 3,848 problems representing about 4.5 million GP–patient encounters at which a lipid test was ordered in general practice across Australia in 2010–11. Figure 12.1 shows the patients and problems for which a lipid test was ordered and describes other management for the same problems.

Patient age and sex

The sex distribution of patients receiving lipid tests (52.3% male) differed from the sex distribution of the BEACH sample (42.9% male; Table 6.1). Lipid tests were ordered at 4.6% of encounters with male patients and at 3.2% of encounters with female patients.

The age distribution also differed from that of the BEACH sample, with more patients at lipid test encounters aged 45–64 years (48.8%) and very few aged less than 25 years (1.7%) than in the total BEACH sample (20.6% aged < 25 years; Table 6.1). Patients aged 45–64 years were those most likely to have a lipid test ordered (6.7% of encounters with this age group involved lipid tests), followed by patients aged 65–74 years (5.9%).

Reasons for encounter

The spectrum of reasons for encounter given by patients at encounters where lipid tests were ordered reflects the mainly preventive and monitoring use of lipid tests by GPs. The most frequent RFEs were check-ups of various kinds and problems such as diabetes and hypertension where lipid level monitoring may be appropriate.

Problems for which lipid tests were ordered

Three quarters of the problems for which lipid tests were ordered were established patient diagnoses, reflecting the preventive and monitoring nature of most lipid tests.

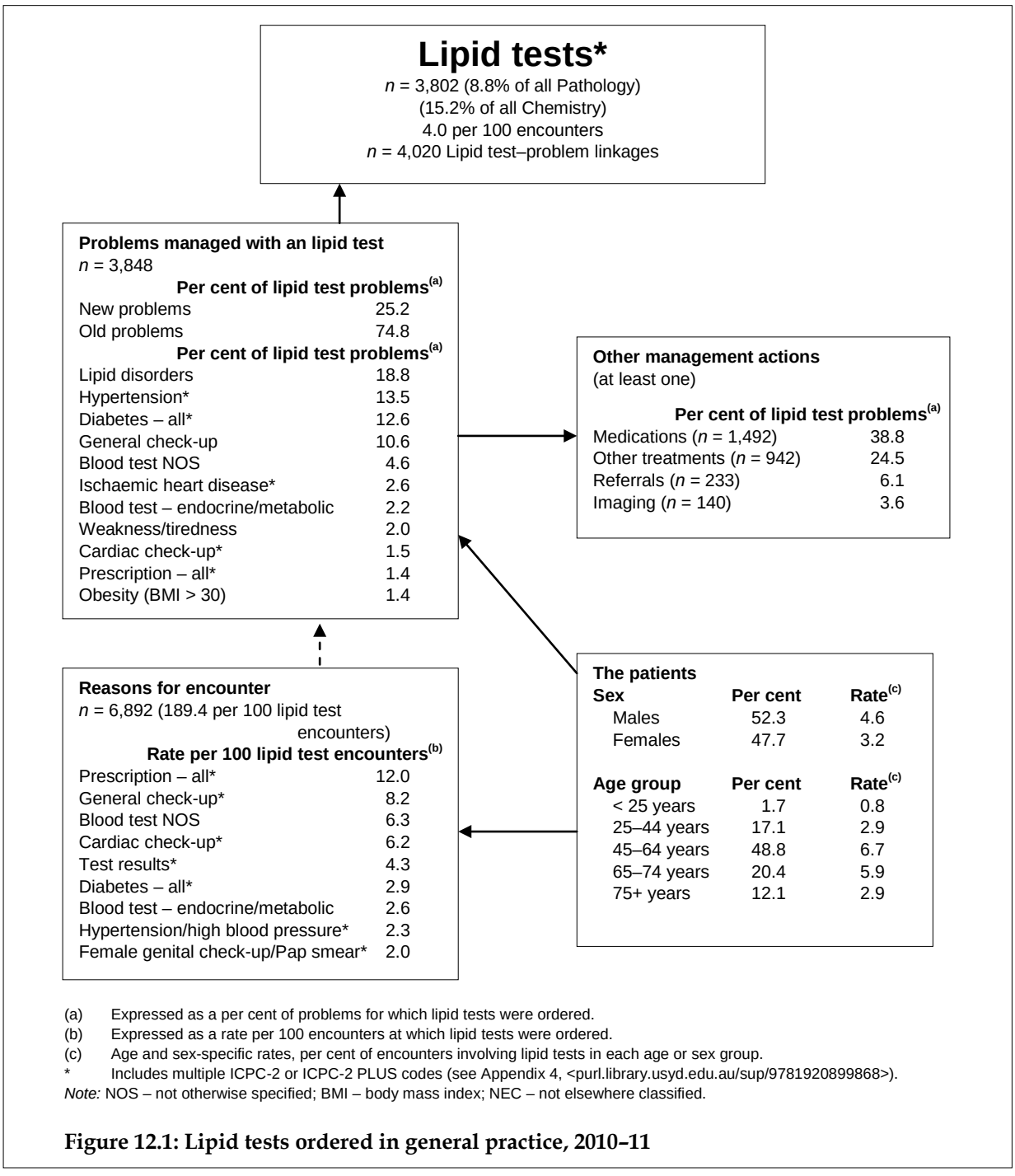
Although lipid disorders were the most common problem for which lipid tests were ordered, they accounted for less than 20% of lipid test problems. Hypertension and diabetes constituted the next most common problems for which lipid tests were ordered. These are common and carry known risk associated with lipid levels. Down in the list were ischaemic heart disease and obesity which are also associated with lipid management or increased risk associated with lipid levels. The remaining problems were mainly associated with the ordering of lipid tests for prevention, screening or ongoing monitoring. The exception was 'weakness/tiredness general' where lipid testing may be used in a diagnostic mode.

Other management actions at encounters where a lipid test was ordered

At least one medication was prescribed, supplied or advised for over-the-counter purchase for nearly 40% of problems for which a lipid test was ordered. GPs also commonly provided other treatments (including clinical and procedural treatments) (for 24.5% of lipid test problems), and less commonly ordered referrals (6.1%) and imaging (3.6%).

Discussion

The rate of lipid testing increased from 3.1 per 100 encounters in 2001–02 to 4.0 per 100 encounters in 2010–11 representing an additional 1.6 million encounters in 2010–11 at which lipid tests were ordered. This rise appears to have been driven by the increasing awareness of the role of lipids in cardiovascular disease, particularly in association with other conditions such as diabetes and hypertension, and the development of effective drug management. This is reflected in guidelines for management of lipid levels which GPs appear to be following.



(a) Expressed as a per cent of problems for which lipid tests were ordered.
(b) Expressed as a rate per 100 encounters at which lipid tests were ordered.
(c) Age and sex-specific rates, per cent of encounters involving lipid tests in each age or sex group.
* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, <purl.library.usyd.edu.au/sup/9781920899868>).
Note: NOS – not otherwise specified; BMI – body mass index; NEC – not elsewhere classified.

Figure 12.1: Lipid tests ordered in general practice, 2010–11

12.6 Changes in investigations over the decade 2001–02 to 2010–11

Data on investigations are reported for each year from 2001–02 to 2010–11 in Chapter 12 of the companion report *A decade of Australian general practice activity 2001–02 to 2010–11*.[1] In that report, changes over time are measured as change in the management of problems (that is, as a rate per 100 problems). This reflects change in how GPs are managing problems, and accounts for the significant increase in the number of problems managed per encounter over the decade (see Section 7.9). The major changes are highlighted below.

- At least one pathology test was ordered for 10.8% of problems managed in 2001–02 rising to 13.3% of problems in 2010–11. The largest increase was in orders for chemical pathology, which increased from 11.5 per 100 problems in 2001–02 to 17.2 per 100 problems in 2010–11. Haematology increased at a slower rate, from 4.3 per 100 problems in 2001–02 to 5.3 in 2010–11. Microbiology test orders increased from 3.4 per 100 problems in 2001–02 to 4.3 in 2010–11.
- Between 2001–02 and 2010–11 the number of problems managed per 100 encounters rose from 143.4 to 152.5 (Table 5.1). Both the rise in the number of tested problems and the rise in the number of problems managed at encounter contributed to an overall increase in the proportion of encounters involving a pathology test. These rose from 14.0% of encounters in 2001–02 to 17.8% in 2010–11, which is over 7 million more encounters at which pathology was ordered in 2010–11 than in 2001–02.
- The number of pathology tests ordered increased from 21.6 tests (or battery of tests) per 100 problems managed in 2001–02 to 29.6 per 100 problems in 2010–11. The rate of pathology orders per 100 encounters increased from 31.0 per 100 encounters in 2001–02 to 45.2 in 2010–11, which extrapolates to approximately 22.4 million more tests (or battery of tests) ordered in 2010–11.
- At least one imaging test was ordered for 5.0% of all problems managed in 2001–02, rising to 5.7% of all problems in 2010–11. The proportion of encounters generating imaging orders increased from 6.9% in 2001–02 to 8.4% in 2010–11, resulting in an estimated 3 million more encounters nationally at which imaging was ordered in 2010–11.
- The number of imaging tests ordered increased from 5.5 tests (or battery of tests) per 100 problems managed in 2001–02 to 6.4 per 100 problems in 2010–11. Total imaging orders per 100 encounters also increased significantly from 7.9 per 100 encounters in 2001–02 to 9.8 in 2010–11, suggesting there were almost 3.7 million more imaging orders in 2010–11 than in 2001–02.

13 Practice nurse activity

This section describes the activities of practice nurses recorded in association with the GP–patient encounters by the GPs in BEACH.

In February 2004, two Medicare item numbers were introduced into the MBS that allowed GPs to claim for specified tasks undertaken by a practice nurse under the direction of the GP. The BEACH recording form (see Appendix 1) was amended to allow the capture of this information from April 2005 onwards.

- GPs were allowed to record multiple (up to three) Medicare item numbers where appropriate, rather than be limited to one item number.
- In the 'other treatments' section, for each problem managed GPs were asked to tick the 'practice nurse' box if the treatment recorded was provided by the practice nurse rather than by the GP. If the box was not ticked it was assumed that the GP provided the 'other treatment'.

The survey form allows GPs to record up to two other treatments for each problem managed at the encounter (i.e. up to eight per encounter). Other treatments include all clinical and procedural treatments provided at the encounters. These groups are defined in Appendix 4, Tables A4.4 and A4.5.

Since February 2004 additional practice nurse items have been added. The nine practice nurse Medicare items recorded by GPs during the 2010–11 BEACH data period are listed with a short description in Table 13.2.

This section investigates: the proportion of encounters involving the practice nurse; the proportion of these that were recorded as claimable under a practice nurse Medicare item number; the distribution of the practice nurse items recorded; treatments provided by practice nurses in association with the GP-recorded encounters; and the problems for which practice nurses provided treatments (in direct association with the GP-recorded encounters).

In Chapter 10, all clinical and procedural treatments recorded by the GPs were reported, irrespective of whether they were provided by the GP or by a practice nurse. As in previous years, injections recorded in the provision of immunisations and vaccinations were not included, as these were already counted as pharmacological management (in Chapter 9). In contrast, this section, being a description of practice nurse activity, reports only the activities indicated as being conducted by a practice nurse and includes the injections for immunisation/vaccination (when given by a practice nurse). GPs are also instructed not to record their taking of routine clinical measurements, such as blood pressure. However, where practice nurses undertook these activities at the consultation, and it was recorded as a practice nurse activity, they have been included in the analysis in this chapter.

When viewing these results, it must be remembered that these practice nurse data will not include activities undertaken by practice nurses during the GP's BEACH recording period that were outside (not associated with) the recorded encounter. Such activities could include Medicare-claimable activities (for example, immunisations/vaccinations) provided under instruction from the GP but not provided at the time of the encounter recorded in BEACH, or provision of other services not currently claimable from Medicare (for example, dietary advice on a one-to-one basis, or in a group situation).

13.1 Practice nurse Medicare claims

There were 7,625 (8.0%) GP–patient encounters for which at least one practice nurse item and/or nurse activity was recorded. However, for 195 of these their activity was not described. At the remaining 7,432 encounters a practice nurse was involved in the management of 7,826 problems (5.4% of all problems managed at all encounters). Simple extrapolation of these results suggests that during 2010–11 practice nurses were involved in almost 9.4 million GP–patient consultations across Australia.

As shown in Table 5.6, at only 3,068 encounters (3.7% of all encounters with at least one MBS item number recorded and 40.2% of the 7,625 encounters involving practice nurses) was a practice nurse Medicare item recorded (Table 13.1), and 3,109 practice nurse items recorded (Table 13.2). Practice nurse items accounted for 3.0% of all Medicare items recorded in BEACH 2010–11 (Table 5.6).

Table 13.1: Summary of practice nurse involvement at encounter

Variable	Number
Total encounters	95,839
Encounters involving practice nurse	7,625
Encounters at which practice nurse activity described	7,432
Encounters with MBS practice nurse item number(s) recorded but activity not described	195
Encounters at which one or more MBS practice nurse item numbers were recorded as claimable	3,068
Total problems managed	146,141
Problems managed with practice nurse involvement	7,826
	Per cent (95% CI)
Encounters involving practice nurses as a proportion of total encounters	8.0 (7.3–8.7)
Problems involving practice nurses as a proportion of total problems	5.4 (4.9–5.8)
Practice nurse claimable encounters as a proportion of total encounters with at least one MBS item recorded	3.7 (3.2–4.1)
Proportion of encounters involving practice nurses for which one or more MBS practice nurse item numbers were recorded as claimable	40.2 (36.9–43.6)

Note: MBS – Medicare Benefits Schedule; CI – confidence interval.

Distribution of practice nurse item numbers claimed at encounters

A total of 3,108 practice nurse item numbers were recorded at 3,068 encounters. Two-thirds (67.0%) of the practice nurse item numbers recorded were for immunisations and a further 28.1% were for wound treatments. Items recorded for practice nurse services to a person with chronic disease accounted for 3.6%, and those claimed for practice nurse conduct of cervical smears (with or without preventive checks) for 1.1% of total practice nurse item numbers recorded. Recorded claims for health checks by nurses were few.

Comparison of the distribution of BEACH practice nurse item numbers recorded and the distribution of the 6.1 million claims made for such items from Medicare in the same data period demonstrated a relatively good fit, with a marked under-representation of claims for chronic disease services (items 10997) and cervical smears (items 10994–10999 inclusive) and an over-representation of claims for immunisations by a practice nurse (item 10993) (Table 13.2). These results suggest that practice nurse conduct of cervical smears and chronic disease services are more likely to occur separately from the GP encounter, while practice nurse immunisations are more likely to be done in association with a GP-patient encounter.

Table 13.2: Distribution of practice nurse item numbers recorded at encounter

Medicare item number	Short descriptor	Number	Per cent of total	Per cent of Medicare practice nurse claims[(a)] (*n* = 6.1 million)
00711/10986[(b)]	Health assessment of four year old who has had /is having 4 year old immunisation, by practice nurse or registered Aboriginal health worker	6	0.2 (0.0–0.4)	0.4
10993	Immunisation by practice nurse	2,082	67.0 (63.1–70.9)	60.4
10996	Wound treatment (other than normal aftercare) by practice nurse	875	28.1 (24.6–31.7)	30.7
10997	Service provided to a person with a chronic disease by a practice nurse or registered Aboriginal Health Worker	111	3.6 (2.5–4.6)	6.2
10994	Cervical smear and preventive checks by practice nurse	20	0.6 (0.0–0.1)	2.0 (all cervical smears)
10995	Cervical smear and preventive checks – women aged 20–69 years, no smear in previous 4 years	1	0.0Ŧ (0.0–0.0)	
10998	Cervical smear by practice nurse	12	0.4 (0.0–0.8)	
10999	Cervical smear – women 20–69 years, no smear in past 4 years	1	0.0Ŧ (0.0–0.0)	
Total[(c)]	**All Medicare practice nurse item numbers**	**3,108**	**100.0**	**100.0**

(a) Total Medicare practice nurse claims July 2010–June 2011 – Medicare health statistics. <www.medicareaustralia.gov.au>

(b) Item 00711 – Health check by a practice nurse or registered Aboriginal health worker – was introduced in 2008 and replaced with item 10986 in May 2010

(c) Two of the 3,110 practice nurse/Aboriginal health worker item numbers (Table 5.6) were excluded due to incomplete data.

Ŧ Rates are reported to one decimal place. This indicates that the rate is less than 0.05 per 100 encounters.

Note: there were no recordings of items: 10987 – Follow-up by practice nurse or registered Aboriginal health worker for Indigenous person who has received a health assessment; 10988 – Immunisation provided by a registered Aboriginal health worker; 10989 – Wound treatment provided by a registered Aboriginal health worker; 16400 – Antenatal services provided by midwives, practice nurses and Aboriginal health workers in rural and remote areas.

Treatments provided by practice nurses

As shown in Chapter 10, GPs reported 50,235 other treatments at encounters. A further 2,266 local injections in administration of immunisations were given by a practice nurse and 1,778 by the recording GP (these were not reported in Chapter 10). So, in total 54,279 other treatments were recorded. Practice nurses provided 8,384 other treatments (representing 15.4% of all other treatments recorded at BEACH encounters) at a rate of 8.7 per 100 recorded encounters. The majority (91.7%) of the practice nurse activity was procedural, and these procedures represented 38.0% of all procedures recorded. In contrast, clinical treatments accounted for 8.3% of practice nurse activity, but practice nurses provided only 2.0% of all recorded clinical treatments. Practice nurses did the majority of the immunisation injections (56.0%) at GPs encounters (Table 13.3).

Table 13.3: Summary of treatments given by practice nurse

	Performed/assisted by practice nurse		Performed by the GP		
Treatment	Number	Row per cent of total	Number	Row per cent of total	Total number recorded[(a)]
Procedures[(a)]	7,689	38.0	12,571	62.0	20,260
(Immunisation injections)	*(2,266)*	*(56.0)*	*(1,778)*	*(44.0)*	*(4,044)*
Clinical treatments	695	2.0	33,324	98.0	34,019
All other treatments	**8,384**	**15.4**	**45,895**	**84.6**	**54,279**

(a) Procedural treatments here include all injections given by a practice nurse for immunisations/vaccinations (*n* = 4,044). These are not included in the summary of the content of encounter in Table 5.1, summary of management in Table 8.1 or in the analyses of other treatments in Chapter 10, because the immunisation/vaccination is already counted as a prescription or GP-supplied medication.

Of the 7,689 procedures performed by practice nurses, 39.7% were injections (74.2% of which were for immunisations), and a further 18.9% were dressing/pressure/compression/tamponade. Together these accounted for 58.6% of all procedures undertaken by practice nurses in association with the recorded GP encounters. Check-ups made up 7.1% of procedures undertaken by the nurse, followed by INR tests (6.5%), incision/drainage/aspirations (5.5%). Practice nurses also undertook a wide range of other procedural activities in association with the GP encounters. The most common are listed in Table 13.4.

Other administrative procedure (which includes administrative/documentation work but excludes provision of sickness certificates) was the most frequently recorded clinical activity, accounting for 23.6% of the 695 clinical treatments provided by nurses, followed by counselling the patient about their health problem (13.1%), general advice/education (10.3%), consultation with a primary care provider (7.5%), counselling about nutrition or weight (6.6%) and advice/education about medication (5.8%) or treatment (5.4%) (Table 13.4).

Table 13.4: Most frequent activities done by a practice nurse

Activity	Number	Per cent of group[(a)]	Rate per 100 encounters involving practice nurse[(a)] (*n* = 7,625)	95% LCL	95% UCL
Procedural treatments	**7,689**	**100.0**	**103.5**	**101.6**	**105.4**
Local injection/infiltration*	3,054	39.7	41.1	37.7	44.5
Dressing/pressure/compression/tamponade*	1,451	18.9	19.5	17.8	21.2
Check-up – practice nurse*	545	7.1	7.3	5.2	9.5
INR test	503	6.5	6.8	5.5	8.1
Incision/drainage/flushing/aspiration/removal body fluid*	426	5.5	5.7	4.7	6.7
Repair/fixation-suture/cast/prosthetic device (apply/remove)*	324	4.2	4.4	3.6	5.1
Electrical tracings*	322	4.2	4.3	3.7	5.0
Excision/removal tissue/biopsy/destruction/ debridement/cauterisation*	235	3.1	3.2	2.5	3.9
Physical function test*	194	2.5	2.6	2.0	3.3
Urine test*	172	2.2	2.3	1.6	3.0
Glucose test	109	1.4	1.5	0.7	2.3
Other diagnostic procedures*	96	1.2	1.3	0.2	2.3
Pap smear*	70	0.9	0.9	0.5	1.3
Physical medicine/rehabilitation – all*	64	0.8	0.9	0.5	1.2
Clinical treatments	**695**	**100.0**	**9.1**	**7.6**	**11.1**
Other administrative procedure (excluding sickness certificate)*	164	23.6	2.2	1.6	2.8
Counselling – problem*	91	13.1	1.2	0.6	1.8
Advice/education NEC*	71	10.3	1.0	0.5	1.4
Consultation with primary care provider*	52	7.5	0.7	0.4	1.0
Counselling/advice – nutrition/weight*	46	6.6	0.6	0.4	0.8
Advice/education – medication*	40	5.8	0.5	0.3	0.8
Advice/education – treatment*	37	5.4	0.5	0.3	0.7

(a) Only those individual treatments accounting for ≥ 0.5% of total treatments by practice nurse are included.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Tables A4.4–A4.6 <purl.library.usyd.edu.au/sup/9781920899868>).

Note: LCL – lower confidence limit; UCL – upper confidence limit; INR – international normalised ratio..

13.2 Problems managed with practice nurse involvement at encounter

Practice nurses were involved in management of a wide variety of problems in association with the GP encounters. The problems managed most often were immunisation/vaccination (29.1% of all problems managed with the involvement of a practice nurse), followed by laceration/cut (5.7%), check-ups (4.7%), and chronic skin ulcer (4.1%). Other common problems that involved practice nurses at the consultations are listed in Table 13.5.

Table 13.5: The most common problems managed with involvement of practice nurses

Problem managed	Number	Per cent of problems involving practice nurse (*n* = 7,826)	Rate per 100 encounters with recorded practice nurse activity[(a)] (*n* = 7,625)	95% LCL	95% UCL
Immunisation/vaccination – all*	2,280	29.1	30.7	27.3	34.0
Laceration/cut	442	5.7	6.0	5.1	6.8
Check-up – all*	371	4.7	5.0	4.1	5.9
Chronic ulcer skin (including varicose ulcer)	325	4.1	4.4	3.7	5.1
Atrial fibrillation/flutter	270	3.4	3.6	2.8	4.4
Diabetes – all*	257	3.3	3.5	2.6	4.3
Excessive ear wax	172	2.2	2.3	1.9	2.7
Malignant neoplasm skin	134	1.7	1.8	1.4	2.2
Blood test – all*	120	1.5	1.6	1.1	2.1
Skin infection – post traumatic	119	1.5	1.6	1.2	2.0
Hypertension*	109	1.4	1.5	1.0	1.9
Repair/fixation – suture/cast/prosthetic device (apply/remove)*	93	1.2	1.2	0.9	1.6
Vitamin/nutritional deficiency	90	1.2	1.2	0.9	1.6
Asthma	87	1.1	1.2	0.8	1.5
Cystitis/urinary infection	83	1.1	1.1	0.8	1.5
Other preventive procedures*	76	1.0	1.0	0.6	1.4
Boil/carbuncle	74	0.9	1.0	0.7	1.3
Pregnancy*	70	0.9	0.9	0.6	1.3
Observation/health education/advice/diet – all*	68	0.9	0.9	0.6	1.3
Burns/scalds	66	0.8	0.9	0.6	1.2
Subtotal	*5,306*	*67.8%*	—	—	—
Total problems involving practice nurse	**7,826**	**100.0**	**105.3**	**104.3**	**106.3**

(a) Rate of nurse provision of treatment at encounter for selected problem per 100 total encounters in which a practice nurse was involved.

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.3, <purl.library.usyd.edu.au/sup/9781920899868>).

Note: LCL – lower confidence limit; UCL – upper confidence limit.

13.3 Discussion

These results suggest that many GPs are claiming Medicare items for practice nurses to provide immunisations and, to a lesser degree, wound treatments, but are infrequently using the cervical smear/preventive check and health check practice nurse item numbers.

The following section extrapolates these results to national estimates and considers them in light of Medicare claims data.[4]

- Extrapolation of the 7,625 encounters involving a practice nurse (8.0% of all encounters) to the 118.1 million GP service items claimed through Medicare in 2010–11 suggests there were 9.4 million encounters nationally that involved practice nurses.
- Extrapolation of the 8,384 activities ascribed to practice nurses in BEACH (8.7 per 100 encounters) to a national estimate suggests there were 10.3 million such activities conducted as part of GP–patient encounters nationally.
- Extrapolation of the 3,109 practice nurse items claimed (at a rate of 3.2 per 100 BEACH encounters) suggests that GPs claimed about 3.8 million practice nurse items for activities the nurses undertook in relation to the GP–patient encounters.

These data suggest that nationally in 2010–11 there were:

- about 6.5 million practice nurse clinical activities undertaken in association with GP–patient encounters that were not claimable or not claimed through Medicare (i.e. estimated 10.3 million activities minus estimated 3.8 million claims above).
- about 2.3 million practice nurse items claimed for practice nurse activities conducted independently of direct GP–patient consultations, that is, services provided separately from the encounter, and therefore not reported by GPs in BEACH encounter records (i.e. 6.1 million Medicare claims from Table 13.2 minus the estimated 3.8 million that were for activities associated with the encounters).

There are no means by which the number of practice nurse clinical activities undertaken independently of the GP–patient encounters for which no claim was made can be estimated, either because the activity did not qualify for Medicare payment, or because the practice simply failed to claim.

Comparison of the services provided by practice nurses (Table 13.4) with the common problems for which these services were provided (Table 13.5) suggests that about 75% of the local injections/infiltrations recorded as given by practice nurses were for immunisations, and the remaining 25% were for other types of injections, and therefore not eligible to be claimed through Medicare.

Table 13.4 shows that nurses dealt with 1,451 dressing/pressure/compression/tamponades in conjunction with the GP encounter, but only 875 claims were made for Medicare payment for wound treatment (Table 13.2). This suggests that about 40% of the dressings recorded for practice nurses were not claimable under Medicare. Some of these may have been follow-up encounters where the follow-up treatment (aftercare) was included in the initial Medicare claim (claimed in the past).

It is clear that practice nurses undertook a wide variety of other activities at the BEACH encounters that did not qualify for Medicare reimbursement.

13.4 Changes in practice nurse activity, 2005–06 to 2010–11

A comparison of practice nurse activity from 2005–06 to 2010–11 is provided in Chapter 13 of the 10-year summary report *A decade of Australian general practice activity 2001–02 to 2010–11*.[1]

Changes are summarised below.

- Encounters involving a practice nurse as a proportion of all encounters more than doubled between 2005–06 (4.2%) and 2008–09 (9.0%), but they reverted a little in 2010–11 to account for 8.0% of all recorded encounters. This suggests that in 2010–11, practice nurses were involved in about 10.3 million GP–patient encounters, 6.1 million more than in 2005–06.
- Between 2005–06 and 2008–09 the proportion of encounters with practice nurse activity for which a Medicare practice nurse item number was recorded remained constant at 36–39%. In 2009–10 there was a sudden increase (to 45.5%) that did not quite reach statistical significance. In 2010–11 the proportion claimed through Medicare returned to its earlier level, at 40.2%.
- Over the six data years the proportion of Medicare claims accounted for by immunisations increased from 63.5% of practice nurse items recorded in 2008–09, to 74.9% in 2009–10, but this increase was not supported by the 2010–11 data which reverted to the 2006–07 level, at 67%. This recent change was also reflected in the Medicare claims data which demonstrated a decrease from 5.5 million claims for immunisation practice nurse items in 2009–10 to only 3.7 million such claims in 2010–11.

  The transient rise in Medicare claims for practice nurse immunisations in 2009–10 may reflect increased immunisations during the H1N1 epidemic.
- The rate of procedures (including tests) undertaken by practice nurses at GP–patient encounters doubled from 4.0 per 100 encounters in 2005–06 to 8.0 per 100 in 2010–11, the largest portion of this increase occurring between 2008–09 and 2009–10.
- Provision of clinical treatments (such as advice and health education) by a practice nurse at GP encounters remained infrequent, at 0.7 clinical treatments per 100 encounters. This was the same rate as in the previous year but had significantly increased from 0.2 per 100 encounters in 2005–06. There was also a small but significant increase in the proportion of clinical treatments that they undertook, from 0.7% clinical treatments in 2005–06 to 2.0% in 2010–11.
- Between 2006–07 and 2010–11 there was a significant increase in the practice nurse INR testing rate. Between 2005–06 and 2010–11 there were decreases in their rate of dressing and of excisions.

14 Patient risk factors

General practice is a useful intervention point for health promotion because the majority of the population visit a GP at least once per year – in 2009–10, 83% of Australians visited a GP at least once (personal communication DoHA, June 2010). GPs, through ongoing professional education, have substantial knowledge of population health, screening programs and other interventions. They are therefore in an ideal position to advise patients about the benefits of health screening, and to counsel patients individually about their lifestyle choices.

Since the beginning of the BEACH program (1998), a section on the bottom of each encounter form has been used to investigate aspects of patient health or health care delivery not covered by general practice consultation-based information. These additional substudies are referred to as SAND (Supplementary Analysis of Nominated Data). The SAND methods are described in Section 2.6.

The patient risk factors collected in BEACH include body mass index (BMI) (calculated using self-reported height and weight), self-reported alcohol consumption and smoking status. Patient risk factors are investigated for a subsample of 40 of the 100 patient encounters recorded by each GP. An example of the encounter form with the patient risk factor SAND questions is included in Appendix 1. The methods used in the risk factor substudies reported in this chapter are described in each section below.

Data on patient risk factors measured in SAND are reported for each of the ten most recent years in the companion report *A decade of Australian general practice activity 2001–02 to 2010–11*.[1]

Abstracts of results and the research tools used in all SAND substudies from April 1998 to March 2011 have been published. Those:

- from April 1998 to March 1999 were published in *Measures of health and health care delivery in general practice in Australia*[22]
- from April 1999 to July 2006 were published in *Patient-based substudies from BEACH: abstracts and research tools 1999–2006*[23]
- since August 2006 have been published in each of the general practice activity annual reports[24-27]
- conducted in the 2010–11 BEACH year are provided in Chapter 15 of this publication.

14.1 Body mass index

High body mass was the third highest contributor to the total burden of disease in Australia in 2003, accounting for 7.5% of the total burden[72], an increase from 4.3% of total burden and sixth rank in 1996.[73] The 2007–08 National Health Survey (NHS) estimated that, based on measured data, 62% of Australians aged 18 years and over were overweight or obese (BMI > 25). Men were more likely to be overweight or obese (68%) than women (55%).[16] The 2007–08 NHS also reported that 25% of children aged 5–17 years were classified as overweight or obese, with boys and girls having similar rates of overweight/obesity (26% and 24% respectively).[16]

Method

Patient BMI was investigated for a subsample of 40 of the 100 patient encounters. Each GP was instructed to ask the patient (or their carer in the case of children):

- What is your height in centimetres (without shoes)?
- What is your weight in kilograms (unclothed)?

Metric conversion tables (feet and inches; stones and pounds) were provided to the GP.

The BMI for an individual was calculated by dividing weight (kilograms) by height (metres) squared. The WHO recommendations[74] for BMI groups were used, which specify that an adult (18 years and over) with a BMI:

- less than 18.5 is underweight
- greater than or equal to 18.5 and less than 25 is normal
- greater than or equal to 25 and less than 30 is overweight
- of 30 or more is obese.

The reported height for adult patients was checked against sex-appropriate upper and lower height limits from the Australian Bureau of Statistics (ABS).[75] Encounters with adults whose reported heights were outside the sex-appropriate limits were excluded from the analysis.

The standard BMI cut-offs described above are not appropriate in the case of children. Cole et al. (2000 & 2007) developed a method that calculates the age–sex-specific BMI cut-off levels for underweight, overweight and obesity specific to children aged 2–17 years.[76,77] There are four categories defined for childhood BMI: underweight, normal weight, overweight and obese. This method, based on international data from developed Western cultures, is applicable in the Australian setting.

The reported height of children was checked against age–sex-appropriate upper and lower height limits from the ABS and Centres for Disease Control (CDC).[75,78] Encounters with children whose reported heights were outside either of the age–sex-appropriate limits were excluded from the analysis.

The BEACH data on BMI are presented separately for adults (aged 18 years and over) and children (aged 2–17 years). The standard BMI cut-offs were applied for the adult sample, and the method described by Cole et al. (2000 & 2007) were used for defining underweight, overweight and obesity in children (aged 2–17 years).[76,77]

Results

Body mass index of adults

The sample size was 31,315 patients aged 18 years and over at encounters with 957 GPs.

- Over half (61.8%) of the patients were overweight (35.1%) or obese (26.7%) (Table 14.1).
- Only 35.8% of adult patients had a BMI in the normal range and 2.4% were underweight (Table 14.1).
- Males were more likely to be overweight or obese (68.4%, 95% CI: 67.3–69.4) than females (57.5%, 95% CI: 56.4–58.5) (results not tabled).
- Overweight/obesity was most prevalent among male patients aged 65–74 years (76.9%) and 45–64 years (75.2%) (Figure 14.1).

- Among female patients, overweight/obesity was most prevalent in those aged 65–74 years (68.1%) and 45–64 years (65.2%) (Figure 14.1).
- Underweight was most prevalent among patients aged 18–24 years and 75 years and over. Of young adults (18–24 years), 7.4% of females and 3.0% of males were underweight, and among those aged 75 years and over, 5.3% of women and 1.4% of men were underweight (Figure 14.2).

The overall and sex-specific prevalence estimates from patients at general practice encounters (in BEACH: 62% of adults, 68% of males and 58% of females were overweight or obese) were consistent with the ABS 2007–08 figures from the National Health Survey (based on measured BMI data), which reported that 62% of adults aged 18 and over (68% of men and 55% of females) were overweight or obese.[16]

Readers interested in prevalence of the three WHO-defined levels of obesity will find more information and discussion in Chapter 7 of *General practice in Australia, health priorities and policies 1998 to 2008*.[79]

Estimation of body mass index for the adult general practice patient population

The BEACH study reports data about patient BMI from a sample of the patients attending general practice. As older people attend a GP more often than young adults, and females attend more often than males, they have a greater chance of being selected in the subsample. This leads to a greater proportion of older and female patients in the sample than in the total population who attend a GP at least once in a year. The 2010–11 BEACH sample was weighted to estimate the BMI of the GP–patient attending population (that is, the 14.3 million adult patients who attended a GP at least once in 2009–10 (personal communication, Department of Health and Ageing (DoHA), June 2010), using the method described by Knox et al. (2008).[20]

The estimates for the adult GP–patient attending population (after adjusting for age–sex attendance patterns) suggest that 26.1% of the adult patient population were obese, 34.6% were overweight, 37.0% were normal weight and 2.3% were underweight (Table 14.1).

Table 14.1: Patient body mass index (aged 18 years and over)

	Male[(a)]		Female[(a)]		Total respondents	
BMI class	Per cent in BEACH sample (95% CI) (*n* = 12,322)	Per cent in patient population (95% CI)[(b)]	Per cent in BEACH sample (95% CI) (*n* = 18,741)	Per cent in patient population (95% CI)[(b)]	Per cent in BEACH sample (95% CI) (*n* = 31,315)	Per cent in patient population (95% CI)[(b)]
Obese	26.1 (25.2–27.1)	25.4 (24.4–26.4)	27.2 (26.3–28.1)	26.7 (25.8–27.7)	26.7 (26.0–27.5)	26.1 (25.3–29.9)
Overweight	42.2 (41.2–43.2)	41.0 (39.9–42.0)	30.3 (29.6–31.0)	29.1 (28.4–29.9)	35.1 (34.4–35.7)	34.6 (33..9–35.3)
Normal	30.6 (29.5–31.6)	32.5 (31.3–33.6)	39.3 (38.3–40.3)	40.9 (39.9–42.0)	35.8 (35.0–36.7)	37.0 (36.2–37.9)
Underweight	1.1 (0.9–1.3)	1.2 (1.0–1.4)	3.2 (2.9–3.5)	3.2 (2.9–3.5)	2.4 (2.2–2.6)	2.3 (2.1–2.5)

(a) Patient sex was not recorded for 252 respondents.

(b) Estimation of BMI among the total adult general practice patient population (that is, patients aged 18 years and over who attended a GP at least once in 2009–10) (*n* = 14.3 million).

Note: BMI – body mass index; CI – confidence interval.

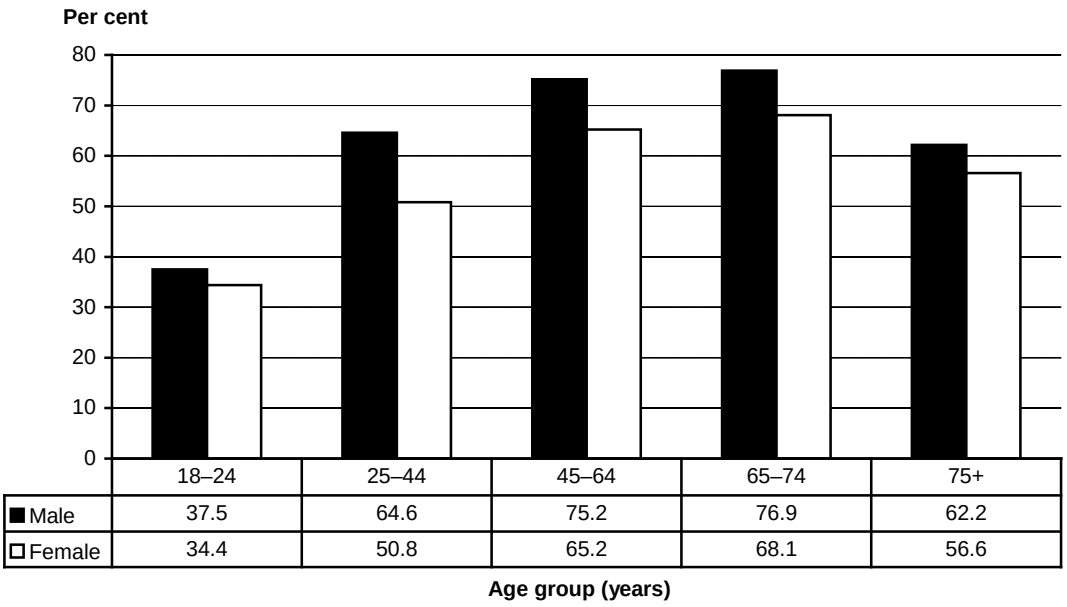


Figure 14.1: Age–sex-specific rates of overweight/obesity in sampled adults

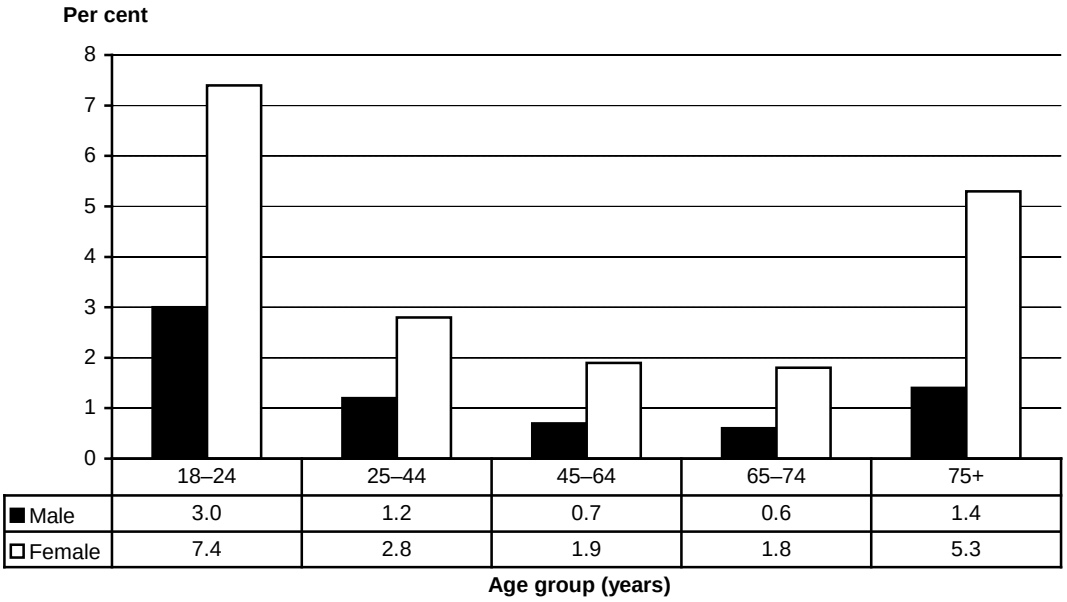


Figure 14.2: Age–sex-specific rates of underweight in sampled adults

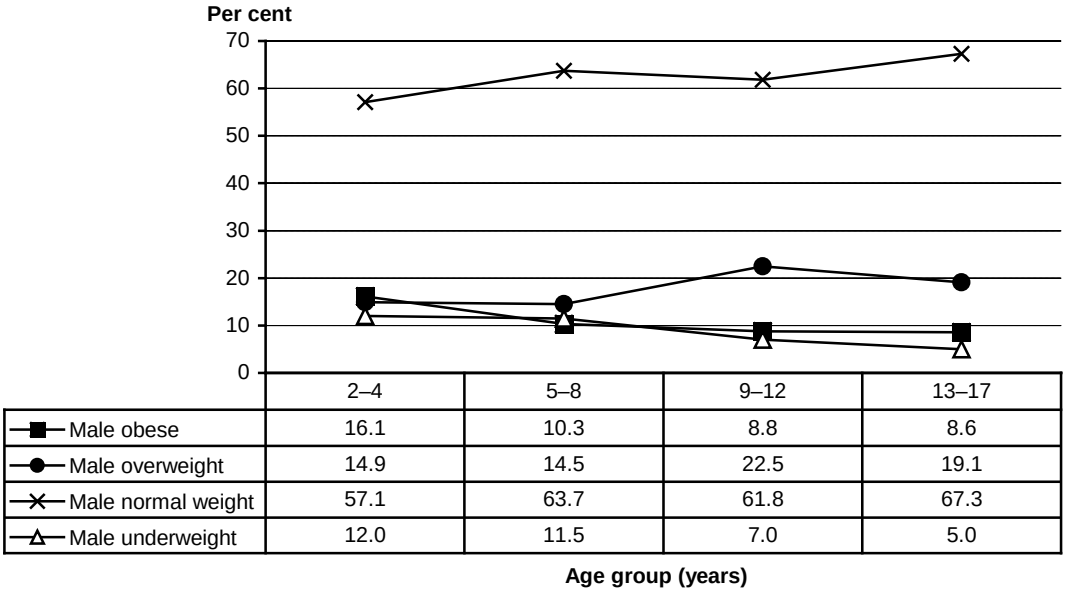
Body mass index of children

BMI was calculated for 3,008 patients aged 2–17 years at encounters with 788 GPs.

- Just over one-quarter of children (28.3%, 95% CI: 26.4–30.2) were classed as overweight or obese – 10.6% (95% CI: 9.3–12.0) obese and 17.7% (95% CI: 16.2–19.1) overweight (results not tabled).
- There was no difference in the prevalence of overweight/obesity among male (28.6%, 95% CI: 26.0–31.2) and female children (28.0%, 95% CI: 25.6–30.4) (results not tabled).

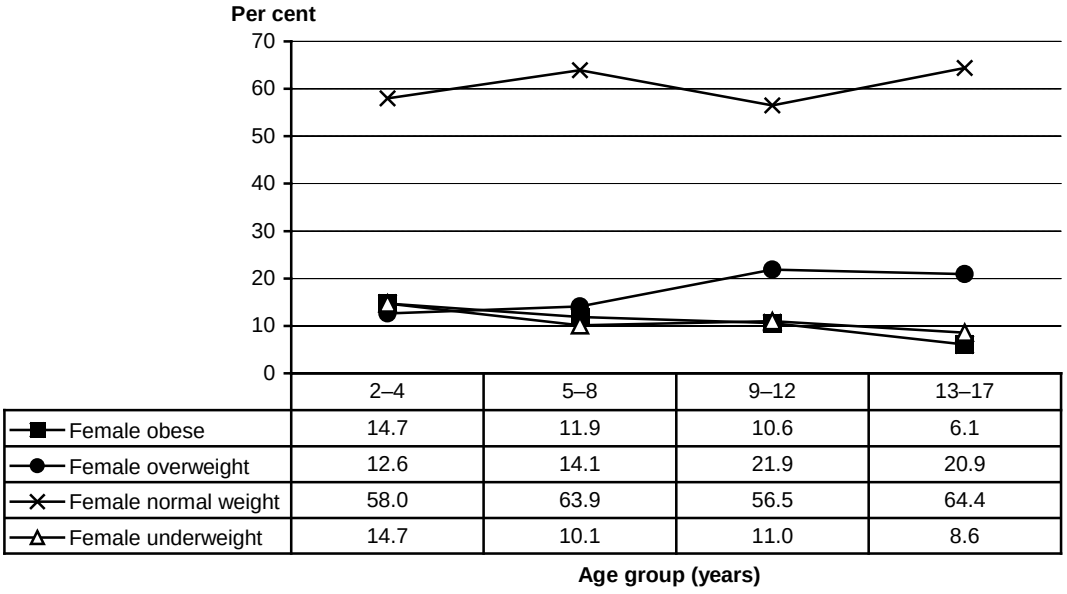
- The age-specific rates of obesity followed similar patterns for both sexes (figures 14.3 and 14.4).

Readers interested in further detail and discussion of overweight and obesity in children attending general practice will find more information in Cretikos et al. (2008) *General practice management of overweight and obesity in children and adolescents in Australia*.[80]



	2–4	5–8	9–12	13–17
Male obese	16.1	10.3	8.8	8.6
Male overweight	14.9	14.5	22.5	19.1
Male normal weight	57.1	63.7	61.8	67.3
Male underweight	12.0	11.5	7.0	5.0

Figure 14.3: Age-specific rates of obesity, overweight, normal weight and underweight in sampled male children



	2–4	5–8	9–12	13–17
Female obese	14.7	11.9	10.6	6.1
Female overweight	12.6	14.1	21.9	20.9
Female normal weight	58.0	63.9	56.5	64.4
Female underweight	14.7	10.1	11.0	8.6

Figure 14.4: Age-specific rates of obesity, overweight, normal weight and underweight in sampled female children

14.2 Smoking (patients aged 18 years and over)

Tobacco smoking is the leading cause of drug-related death and hospital separations in Australia.81 It has been identified as the risk factor associated with the greatest disease burden, accounting for 7.8% of the total burden of disease in Australia in 2003,72 a decrease from 9.7% of total burden in 1996.73 According to the 2007 National Drug Strategy Household Survey (NDSHS), 16.6% of Australians aged 14 years and over smoked daily: 18.0% of males and 15.2% of females.82

Method

GPs were instructed to ask adult patients (18 years and over):

- What best describes your smoking status? Smoke daily
Smoke occasionally
Previous smoker
Never smoked

Results

The smoking status of 32,160 adult patients was established at encounters with 957 GPs. Table 14.2 shows that:

- 14.8% of adult patients were daily smokers
- significantly more male (17.8%) than female patients (12.9%) were daily smokers
- only 2.7% of adult patients were occasional smokers
- more than a quarter of adults (28.3%) were previous smokers.

Table 14.2: Patient smoking status (aged 18 years and over)

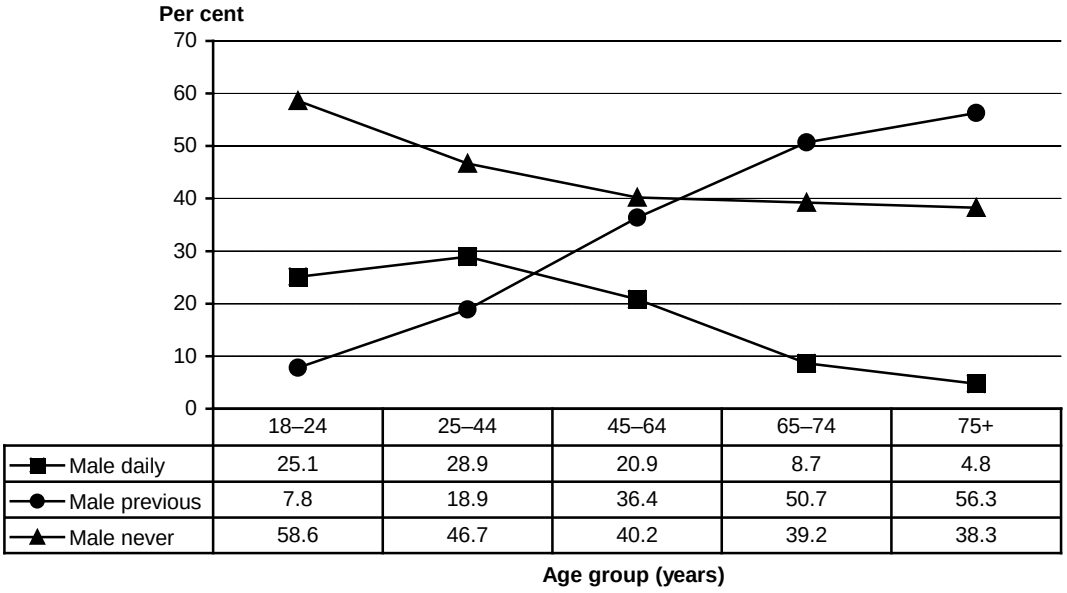
	Male[a]		Female[a]		Total respondents	
Smoking status	Per cent in BEACH sample (95% CI) (n = 12,600)	Per cent in patient population (95% CI)[b]	Per cent in BEACH sample (95% CI) (n = 19,301)	Per cent in patient population (95% CI)[b]	Per cent in BEACH sample (95% CI) (n = 32,160)	Per cent in patient population (95% CI)[b]
Daily	17.8 (16.9–18.7)	21.6 (20.6–22.7)	12.9 (12.2–13.6)	14.5 (13.7–15.3)	14.8 (14.2–15.5)	17.8 (17.0–18.6)
Occasional	3.1 (2.7–3.5)	4.1 (3.5–4.6)	2.4 (2.2–2.7)	2.9 (2.6–3.3)	2.7 (2.4–2.9)	3.5 (3.1–3.8)
Previous	36.8 (35.6–38.0)	30.0 (28.9–31.1)	22.7 (21.8–23.5)	21.5 (20.7–22.4)	28.3 (27.5–29.1)	25.4 (24.7–26.2)
Never	42.3 (41.1–43.5)	44.3 (43.0–45.7)	62.1 (61.0–63.1)	61.0 (60.0–62.1)	54.2 (53.3–55.2)	53.3 (52.3–54.4)

(a) Patient sex was not recorded for 259 respondents.

(b) Estimation of smoking status among the total adult general practice patient population (that is, patients aged 18 years and over who attended a GP at least once in 2009–10) (*n* = 14.3 million).

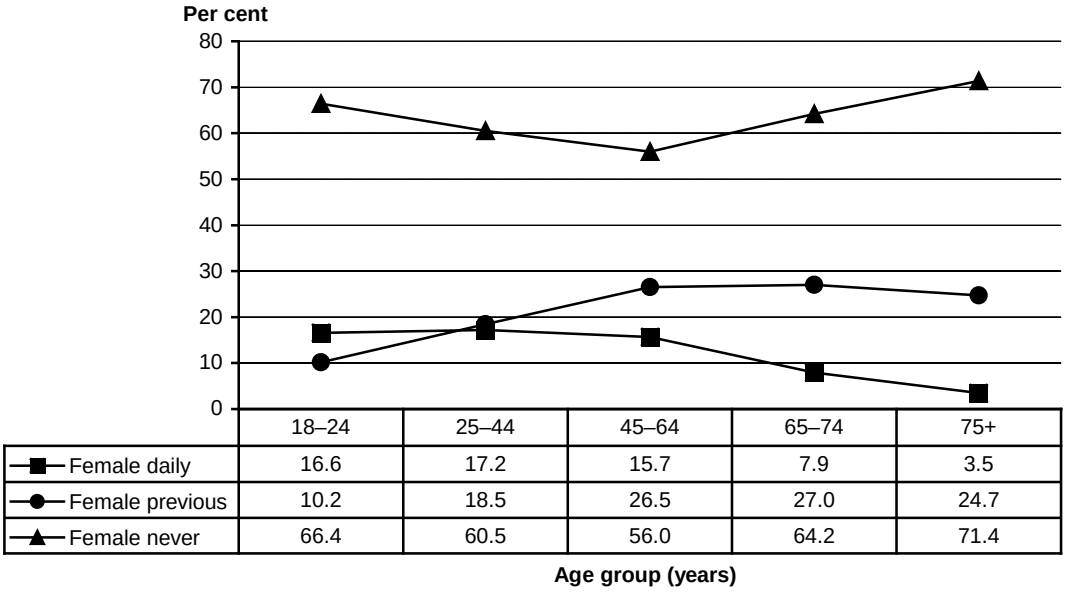
Note: CI – confidence interval.

Daily smoking was most prevalent among younger adult patients aged 18–24 years and 25–44 years, with 19% and 21% respectively (results not tabled). Almost 60% of male and 25% of female patients aged 75 years and over were previous smokers, but only 4.8% of males and 3.5% of females in this age group were daily smokers (figures 14.5 and 14.6).



	18–24	25–44	45–64	65–74	75+
Male daily	25.1	28.9	20.9	8.7	4.8
Male previous	7.8	18.9	36.4	50.7	56.3
Male never	58.6	46.7	40.2	39.2	38.3

Figure 14.5: Smoking status – male age-specific rates of sampled patients



	18–24	25–44	45–64	65–74	75+
Female daily	16.6	17.2	15.7	7.9	3.5
Female previous	10.2	18.5	26.5	27.0	24.7
Female never	66.4	60.5	56.0	64.2	71.4

Figure 14.6: Smoking status – female age-specific rates of sampled patients

Estimation of smoking in the adult general practice patient population

The BEACH study reports data about patient smoking habits from a sample of patients attending general practice. As older people attend a GP more often than young adults, and females attend more often than males, they have a greater chance of being selected in the subsample. This leads to a greater proportion of older and female patients in the subsample than in the total population who attend a GP at least once in a year. We weighted the 2010–11 BEACH smoking substudy to estimate smoking status of the GP–patient attending population (that is, the 14.3 million adult patients who attended a GP at least once in 2009–10 [personal communication, Department of Health and Ageing (DoHA), June 2010]), using the method described by Knox et al. (2008).[20]

The estimates for the GP–patient population (after adjusting for age–sex attendance patterns) suggest that 17.8% of the patient population were daily smokers, 3.5% were occasional smokers, 25.4% were previous smokers and 53.3% had never smoked. Male patients in the total general practice population were significantly more likely to be daily (21.6%), occasional (4.1%) and previous smokers (30.0%) than females patients (14.5%, 2.9% and 21.5%, respectively) (Table 14.2).

14.3 Alcohol consumption (patients aged 18 years and over)

In people aged 65 years and over, low to moderate consumption of alcohol has been found to have a preventive effect against selected causes of morbidity[81] (in particular ischaemic heart disease).[83] In a review of the evidence, the National Health and Medical Research Council (NHMRC) concluded that in young women there was no evidence of any cardiovascular mortality benefit from alcohol consumption, and in young men any benefit was outweighed by other alcohol-related causes of death.[83] In 2003, alcohol consumption accounted for 3.3% of the total burden of disease in Australia; however, after taking into account the benefit derived from low to moderate alcohol consumption, this fell to 2.3%.[72]

The 2007–08 NHS classified alcohol use of those aged 15 years or more based on the estimated average daily consumption of alcohol during the previous week. They found that 12.6% drank at levels considered to be risky (14.4% of males and 10.8% of females).[16]

The 2007 National Drug Strategy Household Survey (NDSHS) found that 10.3% of people aged 14 years and over (10.2% of males and 10.5% of females) drank at levels considered to be risky or high-risk for their health in the long term.[82] The NDSHS also found that 20.4% of people aged 14 years and over (23.7% of males and 17.2% of females) drank alcohol during the preceding 12 months at levels that put their health at risk in the short term.[82] These alcohol consumption risk levels were based on the NHMRC 2001 guidelines.[84]

In February 2009 the NHMRC published a revised edition of its evidence-based alcohol guidelines, which were significantly different from the rescinded 2001 guidelines, and use the concept of progressively increasing risk of harm with the amount of alcohol consumed, rather than specifying 'risky' and 'high-risk' levels of drinking.[85] For this reason the definitions earlier developed by WHO continue to be applied in this report (see 'Method' below).[86]

Method

To measure alcohol consumption, BEACH uses AUDIT-C[87] which is the first three items from the WHO Alcohol Use Disorders Identification Test (AUDIT),[86] with scoring for an Australian setting.[88] The AUDIT-C has demonstrated validity and internal consistency and performs as well as the full AUDIT tool.[89] The three AUDIT-C tool is practical and valid in a primary care setting to assess 'at-risk' alcohol consumption (heavy drinking and/or active alcohol dependence).[87] The scores for each question range from zero to four. A total (sum of all three questions) score of five or more for males or four or more for females suggests that the person's drinking level is placing him or her at risk.[88]

GPs were instructed to ask adult patients (18 years and over):

- How often do you have a drink containing alcohol?
  Never
  Monthly or less
  Once a week/fortnight
  2–3 times a week
  4 times a week or more
- How many standard drinks do you have on a typical day when you are drinking?
  _____
- How often do you have six or more standard drinks on one occasion?
  Never
  Less than monthly
  Monthly
  Weekly
  Daily or almost daily

A standard drinks chart was provided to each GP to help the patient identify the number of standard drinks consumed.

Results

Patients' self-reported alcohol consumption was recorded at 31,190 adult patient (18 years and over) encounters with 956 GPs.

- About one-quarter of adults reported drinking alcohol at at-risk levels (24.8%) (Table 14.3).
- At-risk drinking was more prevalent among male patients (30.0%) than female patients (21.4%) (Table 14.3).
- At-risk drinking was most prevalent in those aged 18–24 years, particularly among men. In this age group almost half of the males and one in three of the females reported at-risk alcohol consumption (Figure 14.7).
- The proportion of patients who were at-risk drinkers decreased with age for both males and females (Figure 14.7).

These estimates are not comparable with the 2007–08 NHS[16] or the 2007 NDSHS[82] as they all use different concepts for defining alcohol consumption and risk, and different adult populations (patients aged 18 years or more for BEACH, persons aged 15 years or more for the NHS, and persons aged 14 years or more for the NDSHS).

Readers interested in the relationship between morbidity managed and alcohol consumption will find more information in Proude et al. (2006) *The relationship between self-reported alcohol intake and the morbidities managed by GPs in Australia*.[90]

Table 14.3: Patient alcohol consumption (aged 18 years and over)

	Male		Female		Total respondents	
Alcohol consumption	Per cent in BEACH sample (95% CI) (*n* = 12,321)	Per cent in patient population (95% CI)[(a)]	Per cent in BEACH sample (95% CI) (*n* = 18,869)	Per cent in patient population (95% CI)[(a)]	Per cent in BEACH sample (95% CI) (*n* = 31,190)	Per cent in patient population (95% CI)[(a)]
At-risk drinker	30.0 (28.8–31.2)	34.5 (33.1–35.9)	21.4 (20.5–22.3)	23.1 (22.1–24.1)	24.8 (23.9–25.7)	28.3 (27.3–29.3)
Responsible drinker	47.7 (46.5–48.9)	44.7 (43.4–45.9)	41.5 (40.4–42.6)	42.4 (41.2–43.5)	44.0 (43.0–44.9)	43.4 (42.4–44.4)
Non-drinker	22.3 (21.2–23.5)	20.9 (19.6–22.1)	37.1 (35.7–38.5)	34.5 (33.1–35.9)	31.3 (30.2–32.4)	28.2 (27.1–29.4)

(a) Estimation of alcohol consumption among the total adult general practice patient population (that is, patients aged 18 years and over who attended a GP at least once in 2009–10) (*n* = 14.3 million).

Note: CI – confidence interval.

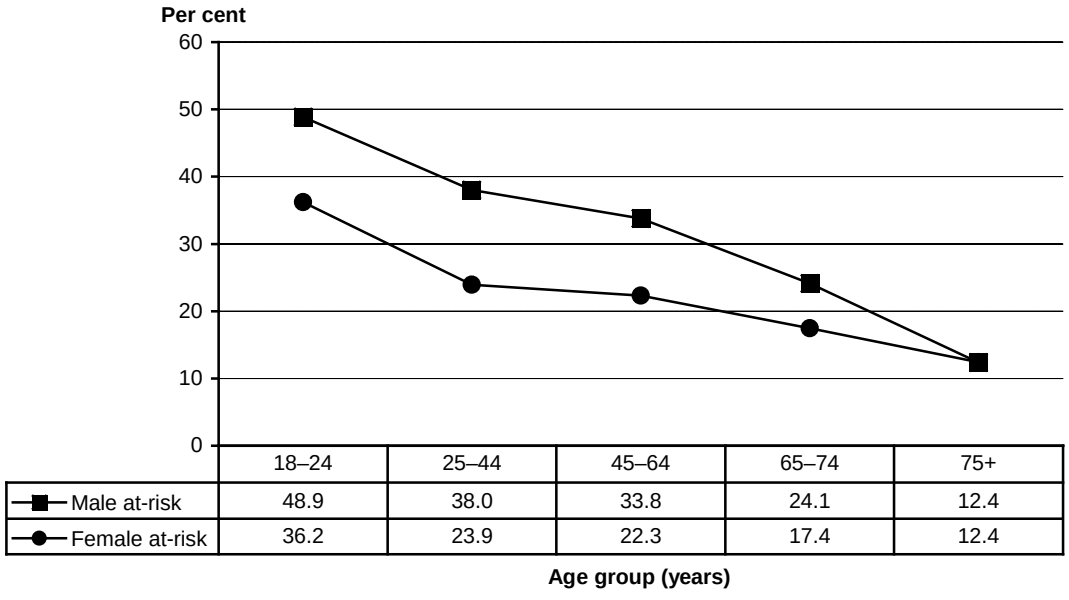


Figure 14.7: Age–sex-specific rates of at-risk alcohol consumption in sampled patients

Estimation of alcohol consumption in the adult general practice patient population

The BEACH study reports data about patient alcohol consumption from a sample of the patients attending general practice. As older people attend a GP more often than young adults, and females attend more often than males, they have a greater chance of being selected in the subsample. This leads to a greater proportion of older and female patients in the sample than in the total population who attend a GP at least once in a year. We weighted the 2010–11 BEACH sample to estimate alcohol of the GP–patient attending population (that is, the 14.3 million adult patients who attended a GP at least once in 2009–10 [personal

communication, Department of Health and Ageing (DoHA), June 2010]), using the method described by Knox et al. (2008).[20]

The estimates for the GP–patient population (after adjusting for age–sex attendance patterns) suggest that 28.3% of the patient population were at-risk drinkers, 43.4% were responsible drinkers and 28.2% were non-drinkers. Male patients in the total general practice population were significantly more likely to be at-risk drinkers (34.5%) than female patients (23.1%) (Table 14.3).

14.4 Risk factor profile of adult patients

All patient risk factor questions (BMI, smoking and alcohol consumption) were asked of the same subsample of patients. This allows us to build a risk profile of this sample of adult patients. For the purposes of this analysis, being overweight or obese, a daily smoker or an at-risk drinker were considered risk factors. A risk factor profile was prepared for the 30,177 adult patients for whom data were available in all three elements, with 956 GPs. (Table 14.4).

- About half (52.2%) the adult respondents had one risk factor. The most common was overweight (23.5% of adults) followed by obesity (18.4%).
- One in five patients had two risk factors, the most common combinations being:
  - overweight and at-risk alcohol consumption – 6.7% of patients
  - obesity and at-risk alcohol consumption – 4.7% of patients
  - daily smoking and at-risk alcohol consumption – 2.9% of patients.
- A small group of patients (3.7%) had all three risk factors.

Table 14.5 shows the number of risk factors by patient sex.

- Females were significantly more likely to have no risk factors (28.8%) or one risk factor (53.1%) than males (19.2% and 50.9% respectively).
- Almost one-third of males (30.0%) had two or three risk factors compared with about one in five (18.1%) females.

Estimation of the risk profile of the adult general practice patient population

The 2010–11 BEACH sample was weighted to estimate the risk profile of the GP–patient attending population (that is, the 14.3 million adult patients who attended a GP at least once in 2009–10 (personal communication, Department of Health and Ageing (DoHA), June 2010), using the method described by Knox et al. (2008).[20]

The estimates for the GP–patient population (after adjusting for age–sex attendance patterns) show that:

- one-quarter of patients had no risk factors (24.0%)
- half of the adult patients had one risk factor (50.0%), the most common being overweight (21.4% of adults) followed by obesity (16.9%)
- one in five patients had two risk factors (21.4%), the most common combinations being overweight and at-risk alcohol consumption (7.2%), followed by obesity and at-risk alcohol consumption (4.9%)
- 4.7% of patients who attend general practice had three risk factors (Table 14.4).

Table 14.4: Risk factor profile of patients (aged 18 years and over)

Number of risk factors	Number	Per cent in BEACH sample (*n* = 30,177)	95% LCL	95% UCL	Per cent in patient population[(a)]	95% LCL	95% UCL
No risk factors	**7,545**	**25.0**	**24.3**	**25.7**	**24.0**	**23.2**	**24.8**
One risk factor	**15,749**	**52.2**	**51.5**	**52.9**	**50.0**	**49.2**	**50.7**
Overweight only	7,080	23.5	22.9	24.1	21.4	20.8	22.1
Obese only	5,549	18.4	17.8	19.0	16.9	16.3	17.5
At-risk alcohol level only	2,122	7.0	6.6	7.5	7.9	7.4	8.4
Current daily smoker only	998	3.3	3.1	3.5	3.7	3.4	4.0
Two risk factors	**5,774**	**19.1**	**18.5**	**19.8**	**21.4**	**20.6**	**22.1**
Overweight and at-risk alcohol level	2,014	6.7	6.3	7.0	7.2	6.8	7.6
Obese and at-risk alcohol level	1,411	4.7	4.4	5.0	4.9	4.6	5.2
Daily smoker and at-risk alcohol level	868	2.9	2.6	3.1	3.7	3.4	4.0
Overweight and current daily smoker	804	2.7	2.5	2.9	3.0	2.8	3.3
Obese and current daily smoker	677	2.2	2.0	2.4	2.5	2.3	2.8
Three risk factors	**1,109**	**3.7**	**3.4**	**4.0**	**4.7**	**4.3**	**5.0**
Overweight and current daily smoker and at-risk alcohol level	669	2.2	2.0	2.4	2.9	2.6	3.1
Obese and current daily smoker and at-risk alcohol level	440	1.5	1.3	1.6	1.8	1.6	2.0

(a) Estimation of risk factor profile among the total adult general practice patient population (that is, patients aged 18 years and over who attended a GP at least once in 2009–10) (*n* = 14.3 million).

Note: LCL – lower confidence limit; UCL – upper confidence limit.

Table 14.5: Number of risk factors, by patient sex

	Male		Female	
Number of risk factors	Per cent in BEACH sample (95% CI) (*n* = 11,955)	Per cent in patient population (95% CI)[(a)]	Per cent in BEACH sample (95% CI) (*n* = 18,222)	Per cent in patient population (95% CI)[(a)]
No risk factors	19.2 (18.3–20.0)	18.2 (17.2–19.1)	28.8 (27.9–29.7)	28.9 (28.0–29.9)
One risk factor	50.9 (49.8–51.9)	47.9 (46.8–49.1)	53.1 (52.2–53.9)	51.7 (50.8–52.5)
Two risk factors	24.7 (23.7–25.6)	27.3 (26.2–28.4)	15.5 (14.8–16.2)	16.3 (15.6–17.1)
Three risk factors	5.3 (4.9–5.8)	6.6 (6.0–7.2)	2.6 (2.3–2.9)	3.0 (2.7–3.4)

(a) Estimation of risk factor profile among the total adult general practice patient population (that is, patients aged 18 years and over who attended a GP at least once in 2009–10) (*n* = 14.3 million).

Note: CI – confidence interval.

14.5 Changes in patient risk factors over the decade 2001–02 to 2010–11

To investigate changes over time in these patient risk factors, results are reported from the BEACH sample data for each year from 2001–02 to 2010–11 in the companion report *A decade of Australian general practice activity 2001–02 to 2010–11*.[1]

The major changes between 2001–02 and 2010–11 are summarised below.

- The prevalence of obesity in adults attending general practice increased significantly, from 21.5% in 2001–02 to 26.7% in 2010–11, an increase apparent in both male and female patients. The prevalence of overweight in adults attending general practice also increased significantly, from 33.5% in 2001–02 to 35.1% in 2010–11, but the increase was only apparent in female patients.
- The prevalence of overweight and obesity in children aged 2–17 years remained fairly static from 2001–02 to 2010–11, with about 10–11% of children being obese and about 18% overweight.
- Prevalence of daily and occasional smoking decreased significantly in adults aged 18 years and over, from 18.4% and 4.1%, respectively, in 2001–02 to 14.8% and 2.7% in 2010–11.
- The prevalence of at-risk alcohol consumption among adults aged 18 years and over remained fairly static at about 25–26% between 2001–02 and 2010–11.

15 SAND abstracts and research tools

Since BEACH began in April 1998, a section on the bottom of each encounter form has been used to investigate aspects of patient health or health care delivery not covered by general practice consultation-based information. These additional substudies are referred to as SAND (Supplementary Analysis of Nominated Data). The SAND methods are described in Section 2.6. All substudies were approved by the AIHW Ethics Committee (on behalf of the AIHW and the University of Sydney).

The Family Medicine Research Centre (FMRC) and participating stakeholders of the BEACH program select topics for investigation in each of the SAND studies. In each BEACH year, up to 20 substudies can be conducted in addition to the study of patient risk behaviours (see Chapter 14). Topics are often repeated to increase the size of the sample and its statistical power.

This chapter includes the abstracts and research tools for SAND substudies conducted from April 2010 to March 2011. The subjects covered in the abstracts in this chapter are listed in Table 15.1, with the sample size for each topic.

Table 15.1: SAND abstracts for 2010–11 and sample size for each

Abstract number	Subject	Number of respondents	Number of GPs
162	Pneumococcal vaccination and middle ear infections	2,920	98
163	Chronic kidney disease in general practice patients	2,734	91
164	Type 2 diabetes, weight gain and blood glucose management	2,579	90
165	Migraine and acute/rescue medication use in general practice patients – 2010	2,856	98
166	Hypertension, hypercholesterolaemia and diabetes	2,789	95
167	Management of gout in general practice patients	2,800	95
168	Management of major depression	2,272	77
169	Hypertension, comorbidity and blood pressure control	2,350	79
170	Use of SSRIs and/or SNRIs in general practice patients	2,847	100
171	Influenza and pneumococcal vaccination among general practice patients	2,946	100
172	Diabetes management in general practice patients	2,839	72
173	Type 2 diabetes resource use	4,626	182
174	Atrial fibrillation/flutter in general practice patients	2,402	83
175	Pertussis and persistent cough among general practice patients	2,422	82
176	Comorbidity and management of gout in GP patients	3,094	105
177	Multiple morbidity and chronic heart failure	2,952	104
178	Warfarin use in general practice patients	3,075	106
179	Pneumococcal vaccination and pneumonia in older Australian general practice patients[(a)]	1,618	102

(a) Substudy limited to patients aged 50 years and over.

SAND abstract number 162: Pneumococcal vaccination and middle ear infections

Organisation supporting this study: GlaxoSmithKline Australia Pty Ltd

Issues: Pneumococcal vaccination coverage in past five years in patients attending general practice; twelve month incidence of middle ear infection; incidence among those vaccinated for pneumococcus; incidence in those vaccinated with Pneumovax 23 versus Prevenar; treatments and referral rates for middle ear infection.

Sample: 2,920 patients from 98 GPs; data collection period: 04/05/2010 – 07/06/2010

Method: Detailed in the paper entitled *SAND method 2010–11* at: <www.fmrc.org.au/publications/SAND_abstracts.htm>.

Summary of results

Sample size and patient demographics: The age and sex distribution of the 2,920 patients did not differ from that of patients at all 2009–10 BEACH encounters.

Pneumoccocal vaccination status was given for 2,918 patients, of whom 918 (31.5%, 95% CI: 28.0–34.9) had been vaccinated in the past five years ('vaccinated patients'), 71.4% with Pneumovax 23, 24.5% with Prevenar, and for 4.1% the type not known. Vaccination coverage was 57.1% among those aged < 15 years and 70.2% among those aged 65+ years. Highest vaccination levels among young patients were in 1–4 year olds (83.3%), and < 1 year (61.8%). Among older patients, coverage was 74.6% of 75+ year olds and 65.3% of 65–74 year olds.

Presence/absence of middle ear infection in the previous 12 months ('period incidence') was recorded for 2,901 patients, 147 (5.1%, 95% CI: 3.8–6.4) of whom had had an infection. Incidence was highest among 1–4 (32.9%), < 1 (10.5%) and 5–14 (21.3%), year olds – being 23.9 for all children aged < 15 years. Incidence was negligible (0.5 %) among patients aged 65 years and over. Of 137 respondents with a middle ear infection, 58 (42.3%) had been vaccinated for pneumococcus prior to the most recent middle ear infection.

Incidence of middle ear infection among 913 vaccinated respondents was 7.9% (95% CI: 5.6–10.1) and did not significantly differ from the overall incidence.

The vast majority (86.3%) of patients given Pneumovax 23 were aged 65 years or more, in line with guidelines for its administration. The period incidence of middle ear infection (0.6%) aligned with that found for the total sample of older people.

The majority (80.3%) of 223 responding patients given Prevenar were aged < 5 years, in line with guidelines for its administration. Period incidence of middle ear infection was 28.6% compared with the overall incidence in this age group of 25.7%.

Of 136 respondents who had had middle ear infection, 25 (18.4%) had been referred: mostly to ENT specialists (n = 20, 14.7%) and/or audiologists (n = 7, 5.2%).

Treatments were described for 135 respondents who had had middle ear infection. The majority (92.6%) were treated with medication (+/- other treatments). Of 177 medications given, 59.3% were antibacterials for systemic use (mostly amoxicillin, 36.7%), followed by analgesics (14.1%) (mainly paracetamol 11.9%). Grommets had been inserted for 4 patients.

The following pages contain the recording form and instructions with which the data in this abstract were collected.

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **PNEUMOCOCCAL VACCINATION AND EAR INFECTION.**

You may tear out this page as a guide to completing the following section of forms.

INSTRUCTIONS

Ask **ALL** of the **next 30 PATIENTS** the following questions **in the order in which the patients are seen.**

Please **DO NOT select patients** to suit the topic being investigated.

Pneumococcal vaccination

Please use the tick boxes to advise whether this patient has had a **pneumococcal vaccination** in the **past 5 years**.

Middle ear infection

Please ask the patient whether they have had a **middle ear infection** in the **past 12 months**.

If '**no**' or '**don't know**' you may **end questions here** for this patient.

Number of ear infections

If '**yes**' please indicate the **number of infections** this patient has had in the **past 12 months**.
If this is **unknown** please tick the box labelled '**Don't know**'.

Vaccination prior to ear infection

Please indicate whether this patient received a **pneumococcal vaccination prior** to the **most recent middle ear infection**.

Referral for ear infection

If the patient has been **referred** in the **past 12 months** for the management of ear infection please use the tick boxes to indicate **where referred**. Please tick all that apply.

Treatment of ear infection

Please ask the patient how the most recent ear infection was **treated**. Please include **all management used** regardless of whether it was recommended by the GP, another health professional or initiated by the patient.

Please specify any **medications** taken by the patient including prescribed and over-the-counter medications (e.g. antibiotics, paracetamol, natural therapy) and any **other treatments** (e.g. procedures, advice) used in the treatment of ear infection.

If the ear infection was **not treated** please tick the box labelled '**no treatment**'.

In the past 5 years has this patient received a pneumococcal vaccine?	Has this patient had a middle ear infection in the past 12 months?	If 'yes' how many middle ear infections has this patient had in the past 12 mths?	Was pneumococcal vaccination prior to most recent middle ear infection?	Referral(s) made for middle ear infection in the past 12 months were to:	How was the most recent middle ear infection treated (either with or without clinician involvement)?
☐ Yes - Pneumovax 23 ☐ Yes - Prevenar ☐ Yes - Synflorix ☐ Yes - unknown ☐ No BL122C	☐ Yes ☐ No ☐ Don't know **End questions** ←	☐ Don't know	☐ Yes ☐ No ☐ Don't know	☐ ENT specialist ☐ Paediatrician ☐ Audiologist ☐ Other: _____ *(please specify)* ☐ No referral	Medications (prescribed / OTC*): _____ _____ _____ (*OTC=over-the-counter) Other treatments/procedures: _____ _____ _____ ☐ No treatment

SAND abstract number 163: Chronic kidney disease in general practice patients

Organisation supporting this study: FMRC in collaboration with Kidney Health Australia

Issues: For patients aged 24+ years – the proportion: who had undergone kidney function tests in the previous 12 months; with conditions associated with chronic kidney disease (CKD); with risk factors for CKD; with drug dosage adjustments due to kidney function (and test used); prevalence of CKD; stages of CKD; and underlying causes of CKD.

Sample: 2,734 patients from 91 GPs; data collection period: 30/03/2010 – 03/05/2010

Method: Detailed in the paper entitled *SAND method 2010–11* at: <www.fmrc.org.au/publications/SAND_abstracts.htm>. 'Heart disease or failure' was defined as: clinical or investigative signs of typical angina; past myocardial infarct; unstable angina; past coronary artery bypass graft; past percutaneous coronary intervention; coronary artery disease, or congestive cardiac failure. Stages of disease were defined according to National Kidney Foundation Guidelines.

Summary of results

In the sample, 2,256 patients were 24 years or older, and 2,199 (97.5%) of these responded to kidney test questions. Complete kidney function check (both serum creatinine and proteinuria/microalbuminuria) was performed for 13.3% (95% CI: 9.3–17.3); 50.2% had a serum creatinine test only; 1.2% had a urine test only, and 28.0% had neither test in the previous 12 months. Status was not known for 7.4%. At least one test had been performed in the previous 12 months for 64.7%.

Of 2,256 patients, responses to CKD-associated conditions were reported for 2,104 (93.3%). Of these, 918 patients (43.6%) had at least one: 33.1% had hypertension; 13.6% had heart disease or failure; 13.4% had diabetes; and 3.5% had previous cerebrovascular attack or transient ischaemic attack (multiple responses allowed). More than half (56.4%) had none of the listed conditions.

Of the above 918 patients, current risk status was reported for 896 (97.6%), of whom 70.9% were taking an ACE Inhibitor or angiotensin II receptor blocker (ARB); 61.5% had total cholesterol level of ≥ 4 mmol/L; 53.3% had diabetes and HbA1c ≥ 7%; 49.4% had BP ≥ 130/80 mmHg; 21.0% had HbA1c ≥ 7%; and 13.2% had Hb < 120g/L.

Of the 2,256 patients sampled, responses to medication dose adjustment were reported for 1,746 (77.4%). For 88 of these (5.0%), medication dosage had been altered because of kidney function. Of these, the type of glomerular filtration rate (GFR) used was reported for 68 patients (77.3%), and the majority (61 patients, 89.7%) reported eGFR automatically generated by pathology results. The Cockcroft Gault formula was used for 4 patients (5.9%).

Of the 2,256 patients originally sampled, responses to diagnosis of CKD were reported for 1,920 (85.1%). Of these, 207 (10.8%) had diagnosed CKD, and 203 reported the Stage of disease. The majority were at Stage 3 (53.2%); 27.1% were at Stage 2; 10.8% were at Stage 4. The smallest proportions were at Stage 1 (4.9%) and Stage 5 (3.9%).

Of the 207 patients with diagnosed CKD, the underlying cause was reported for 200 (96.6%). The most common cause was vascular disease (56.5%), 31.5% reported diabetes, 2.5% (5 patients) had glomerulonephritis, and for one patient polycystic kidney disease was the underlying cause of their CKD. For 28 patients (14.0%) the underlying cause was not known.

The following pages contain the recording form and instructions with which the data in this abstract were collected.

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **CHRONIC KIDNEY DISEASE.**

You may tear out this page as a guide to completing the following section of forms.

INSTRUCTIONS

Ask **ALL** of the **next 30 PATIENTS** the following questions **in the order in which the patients are seen.**

Please **DO NOT select patients** to suit the topic being investigated. I.e. if the patient is **NOT** aged 18 years and over you may leave this section BLANK.

Assessment of renal function

Please ask these questions for **patients aged 18 years and over**. Please use the tick boxes to advise whether this patient has had their **kidney function** tested in the past 12 months, and with **what test/s**.

Please tick as many as apply.

Current risk status

If the patient has any of the conditions listed in the previous question please use the tick boxes to indicate whether the patient **currently** (or at the time of **most recent testing**) meets any of the **listed risk levels/ factors**.

Glomerular filtration rate (GFR) calculation used

If **yes** please indicate which **GFR calculation** was used to evaluate kidney function informing the dose adjustment decision.

Stage of disease*

If the patient has been diagnosed with CKD, please advise what **stage of the disease** currently applies to this patient.

If you **do not know** (e.g if test results are not available) please tick the box labelled 'don't know'

Stage*	Description	GFR (mL/min/1.73m2)
1	Kidney damage with normal or ↑ GFR	>= 90
2	Kidney damage with mild ↓ GFR	60 - 89
3	Moderate ↓ GFR	30 - 59
4	Severe ↓ GFR	15 - 29
5	Kidney failure	<15 (or dialysis)

*Stages classified as per National Kidney Foundation Guidelines. Part 4 - 'Definition and Stages of Chronic Kidney Disease'.

Conditions

Please advise whether the patient **has** any of the **listed conditions**. Tick as many as apply.

Heart disease or failure* *is defined as: clinical or investigative signs of typical angina, past myocardial infarct, unstable angina, past CABG, past percutaneous coronary intervention, coronary artery disease or congestive cardiac failure.*

If the patient has **none** of the listed conditions please tick the box labelled '**none of the above**'.

Drug dose adjustment

Please indicate whether any drug **dosage** has been **adjusted due to the patient's kidney function** in the **last 12 months**.

CKD diagnosis

Please advise whether the patient has been **diagnosed** with **Chronic Kidney Disease (CKD)**, either today or prior to today's consultation.

If the patient has **never** been diagnosed with CKD **please end the questions here**.

Underlying cause of CKD

Please specifiy the **underlying cause of CKD** for this patient, if one has been identified.

If a specific cause has **not yet been determined**, please tick the box labelled '**unknown**'.

For patients 18+ yrs:

In the past 12 mths has kidney function / damage been assessed? *(tick all that apply)*

- ☐ Yes - serum creatinine test
- ☐ Yes - urine test for proteinuria/ microalbuminuria
- ☐ No
- ☐ Don't know

BL121B

Does this patient have: *(tick all that apply)*

- ☐ Diabetes
- ☐ Hypertension
- ☐ Heart disease or failure* *(see green sheet)*
- ☐ Previous CVA or TIA
- ☐ None of the above

If 'yes' to any of these listed diseases does the patient have:

	Yes	No
BP ≥130/80mmHg	☐	☐
Total chol ≥4mmol/L....	☐	☐
HbA1c ≥7%	☐	☐
Hb <120g/L.....	☐	☐
Taking ACEi or ARB....	☐	☐

Was any drug dosage adjusted due to the patient's kidney function in the past 12 mths?

- ☐ Yes
- ☐ No

If 'yes' which GFR was used?

- ☐ eGFR automatically generated by lab
- ☐ Calc. by clinician using Cockcroft-Gault formula
- ☐ Other GFR formula
- ☐ Don't know

Has the patient been diagnosed with Chronic Kidney Disease (CKD)?

- ☐ Yes
- ☐ No→ **End Qs**

If 'yes' what is their Stage* of disease? *(see definitions on green sheet)*

- ☐ Stage 1
- ☐ Stage 2
- ☐ Stage 3
- ☐ Stage 4
- ☐ Stage 5
- ☐ Don't know

Underlying cause of CKD is:

- ☐ Glomerulonephritis
- ☐ Diabetes
- ☐ Vascular disease
- ☐ Polycystic kidney disease
- ☐ Other *(please specify)*

_____

- ☐ Unknown

SAND abstract number 164: Type 2 diabetes, weight gain and blood glucose management

Organisation supporting this study: AstraZeneca Pty Ltd (Australia)

Issues: Prevalence of diagnosed Type 2 diabetes in patients attending general practice. For patients with Type 2 diabetes: number of visits to a GP in previous year and number of these where diabetes managed; number who have gained weight in previous 12 months; factors contributing to weight gain, if medication a factor which medications patients taking; types of medication used for management of blood glucose; proportion taking mono, dual, triple or quadruple medication therapy for blood glucose; reasons for use of fixed dose combination products; reasons for not using these.

Sample: 2,579 patients from 90 GPs; data collection period: 30/03/2010 – 03/05/2010

Method: Detailed in the paper entitled *SAND method 2010–11* at: <www.fmrc.org.au/publications/SAND_abstracts.htm>.

Summary of results

The age and sex distribution of the 2,579 respondents did not significantly differ from that of patients at all BEACH encounters in 2009–10, 43.9% being male and 35.9% 65 years or more.

The prevalence of Type 2 diabetes (T2DM) in this sample was estimated as 11.3% (95% CI: 9.6–13.1) (n = 292). There was no significant difference in prevalence among males and females. Prevalence was highest among 65–74 year olds at 21.7%. After adjustment for attendance rates by age-sex of patient, we estimated prevalence among the general practice attending population as 7.2% (95% CI: 5.8–8.6).

Data were available on GP visits in the previous 12 months for 278 of the 292 patients with T2DM: 17% had visited less than five times, 21% 5–7 times, 21% 8–10 times, 20% 11–15 times and 22% more than 15 times. Number of visits in the previous 12 months at which diabetes was managed was available for 273 respondents: 8% had 0–1 visits, 52% 2–4, 22% 5–7 and 18% had 8 or more visits.

Of 273 respondents to the weight gain question, 79 (28.9%) had gained weight in the previous 12 months, lifestyle contributing to 68 (86.8%), medications to 17 (21.5%), and other factors contributing to 10 (12.7%) (multiple response allowed). Medication details were given for 16 of the 17 patients for whom medications contributed: 9 were on insulin, 4 were on metformin, and 2 were on a gliclazide. Three other drugs were listed for 3 individuals.

Data were available on pharmacological blood glucose management for 276 of the 292 patients with T2DM: 233 (84.4%) were taking medication for blood glucose management. Therapy could be mono, dual or triple, half (51.9%) were on mono-therapy, 36.1% were on dual and 12.0% were on triple therapy. Six patients were taking a fixed dose combination. Reasons given (multiple response allowed) for the choice of fixed dose combinations centred on convenience (n = 5), cost (n = 3) and compliance (n = 2).

Reasons for not choosing a fixed dose combination were given for 150 of the 227 patients not taking a fixed dose combination product. The GP chose: 'patient has good control' for 95 (63.3%); 'an appropriate drug combination does not exist' for 28 (18.7%); 'an appropriate dose combination does not exist' for 10 (6.7%); and 'other' for 23 (15.3%) patients.

The following pages contain the recording form and instructions with which the data in this abstract were collected.

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **TYPE 2 DIABETES.**

You may tear out this page as a guide to completing the following section of forms.

INSTRUCTIONS

Please answer the following questions for **ALL** of the **next 30 PATIENTS in the order in which the patients are seen.**

Please **DO NOT select patients** to suit the topic being investigated.

Type 2 diabetes

Please advise whether this patient has been diagnosed with **Type 2 diabetes.**

If the patient **does not have** Type 2 diabetes please **end the questions here for this patient**.

Number of visits to the GP

Please use the tick boxes to advise the approximate **number of times** the patient has **consulted a GP for ANY reason** (including diabetes management), during the **past 12 months. Do no include today's visit** in this estimation.

GP visits for diabetes management

Please advise the approximate **number** of occasions when **diabetes was managed** during the **past 12 months**.

Weight gain

Please ask the patient whether they have **gained weight** during the **past 12 months**.

Factors contributing to weight gain

If 'yes' please indicate in **your clinical opinion** what **factors contributed to** the patient's **weight gain**. Tick all that apply.

If you believe medication use was a factor please specify the name of medication(s) in the space provided.

Glucose-lowering medication

Please write the **name** and **form** of the **current medication(s)** taken by the patient for **management of their blood glucose levels**. Please include both oral medications and insulin.

Please indicate the regimen (i.e. **strength, dose and frequency**) of the medication(s).

If the patient is **not currently taking a medication** for blood glucose management please tick the box labelled '**no glucose-lowering medication**'.

Fixed dose combination products for blood glucose management

Combination currently used: If the patient is currently taking a fixed dose combination product for blood glucose control please use the tick boxes to **indicate the reason(s)** that it was **initiated.**

Combination NOT currently used: If the patient is not taking a fixed dose combination product for blood glucose control please use the tick boxes to **indicate the reasons** for this.

Does this patient have Type 2 diabetes?	How many times has the patient visited a GP for any reason in the past 12 months (apart from today)?	At how many visits was their diabetes managed?	In the past 12 mths has this patient gained weight?	If 'yes' in your clinical opinion what factors contributed to this weight gain?	Current med(s) for BLOOD GLUCOSE manag't:	Combination product use (from previous Q):	
☐ Yes ☐ No → **End questions**	☐ None ☐ Once only ☐ 2-4 times ☐ 5-7 times ☐ 8-10 ☐ 11-15 ☐ > 15	☐ None ☐ Once only ☐ 2-4 ☐ 5-7 ☐ >7	☐ Yes ☐ No	☐ Lifestyle *(diet, exercise related)* ☐ Medication(s) currently taken: *(please specify)* _____ ☐ Other: _____	Name & Form / Strength / Dose / Frequency _____ _____ _____ _____ ☐ **No glucose-lowering medication**	**If used, the reason(s) for initiation was:** ☐ Convenience ☐ Cost to patient ☐ Compliance ☐ Other	**If not used, the reason(s) are:** ☐ Pt has good control ☐ Appropriate drug combo does not exist ☐ Appropriate dosage combo does not exist ☐ Other

BL121C

SAND abstract number 165: Migraine and acute/rescue medication use in general practice patients – 2010

Organisation supporting this study: Merck Sharp & Dohme (Australia) Pty Ltd

Issues: The proportion of general practice patients who suffer from migraine attacks. For patients who suffer migraine: frequency per month; type and detail of acute/rescue medication used at time of attack; current and previous use of triptan medication; cardiovascular safety concerns.

Sample: 2,856 patients from 98 GPs; data collection period: 04/05/2010 – 07/06/2010

Method: Detailed in the paper entitled *SAND method 2010–11* at: <www.fmrc.org.au/publications/SAND_abstracts.htm>.

Summary of results

The age and sex distribution of the 2,856 respondents did not differ from the distribution for all 2009–10 BEACH encounters, with the majority (59.8%) being female. Patients aged less than 25 years, 25–44 and 45–64 years accounted for 20.8%, 24.2% and 28.0% of the sample respectively.

Of the 2,856 surveyed patients, 324 (11.3%, 95% CI: 9.5–13.2) suffered from migraine. Prevalence of migraine was significantly higher among females (15.5%, 95% CI: 13.0–18.0) than males (5.4%, 95% CI: 3.8–6.9), and was highest among patients aged 15–24 years, 25–44 years and 45–64 years (12.0%, 18.4% and 15.4% respectively). Of 314 patients with migraine who reported attack frequency, 55.7% had less than one migraine per month, 18.5% had one per month, and 25.8% had two or more per month. Reported migraine frequency per month did not differ between males and females.

Of 316 respondents with migraine, 43 (13.6%) currently used no acute/rescue medication at the time of an attack, and 273 (86.4%) used prescribed and/or advised over-the-counter (OTC) acute/rescue medication. About two-thirds (69.9%) used acute OTC medications, and one in four (25.6%) used prescribed medication. For both OTC and prescribed acute medication the proportion using medication did not differ by migraine frequency.

Of the 81 migraine patients currently taking prescribed acute/rescue medication, 80 gave details of these medications. About half (52.5%, n = 42) were currently using a triptan, most commonly sumatriptan (42.5%, n = 34), followed by zolmitriptan (7.5%, n = 6). Almost half (53.8%, n = 43) were currently using other acute/rescue prescribed medications, paracetamol combinations being the most commonly listed (n = 25), followed by metoclopramide (n = 11).

Of the 273 migraine patients currently on acute/rescue medication/s (OTC or prescribed), 227 gave information about whether they had ever tried a triptan. One-third (31.7%, n = 72) had tried a triptan, 146 (64.3%) had never tried a triptan, and the GP indicated 'Don't know ' for 9 (4.0%). Of the 72 patients who had tried a triptan, 42 (58.3%) were currently taking a triptan.

Of the 146 migraine patients on current acute/rescue medication who had never tried a triptan, 129 gave information on cardiovascular risk concerns related to triptan use. Of the 129 respondents, only 3 (2.3%) had not tried a triptan due to concerns about cardiovascular safety.

The following pages contain the recording form and instructions with which the data in this abstract were collected.

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **TREATMENT OF MIGRAINE.**

You may tear out this page as a guide to completing the following section of forms.

INSTRUCTIONS

Ask **ALL** of the **next 30 PATIENTS** the following questions **in the order in which the patients are seen.**

Please **DO NOT select patients** to suit the topic being investigated.

Migraine

Please advise whether the patient **suffers from migraines**.

If '**no**' you should **end the questions here for this patient**.

Migraine frequency

Please advise the approximate **number of times** the patient would usually experience a **migraine** episode **during a month**.

Acute/rescue medications

Please use the tick boxes to advise which **types of acute/ rescue medications** this patient **currently** uses for an acute **migraine attack**.

Current prescribed acute/rescue medication(s)

If the patient **currently uses a prescribed** medication to treat migraine please **write:**

- **the name and form** of the prescribed medication **(if a triptan is used please tick the appropriate box)**
- **the strength** of the medication **and**
- the **average number of tablets, injections, sprays or wafers used** by the patient **per migraine attack.**

If a prescribed medication is **not currently used** please tick the box labelled '**NO prescribed acute/rescue med used**'.

Triptan medication

Please advise whether this patient has **ever** tried a **triptan** medication to treat **migraine**.

Please use the tick boxes to indicate which triptan medication(s) the patient has used: sumatriptan (e.g. imigran, suvalan, sumigran, sumatab), naratriptan (e.g. naramig), zolmitriptan (e.g. zomig) and rizatriptan (e.g. maxalt).

Please tick one response per row.

Triptan never tried

For patients who have **never tried** a triptan medication please advise whether this was **due to concerns about cardiovascular safety**.

Does this patient suffer from migraines?

☐ Yes

☐ No → **End questions**

BL122B

Migraine frequency per month is:

☐ <1

☐ 1

☐ 2

☐ 3

☐ ≥4

What types of acute/ rescue medications are currently used for an acute migraine attack?

(Tick all that apply)

☐ OTC products

☐ Prescription meds

☐ No medications → **End questions**

What prescribed acute/rescue meds are currently used?

Name & Form	Strength	Avg no. of tabs/inj/sprays per attack
☐ Sumatriptan	_____mg	_____
☐ Naratriptan tablet	2.5 mg	_____
☐ Zolmitriptan tablet	2.5 mg	_____
☐ Rizatriptan wafer	10 mg	_____
☐ Other meds: *(please specify)*	_____	

☐ **NO prescribed acute/rescue med used**

What triptan medications has this patient ever tried? *(Please tick one response per row)*

	Yes	No	Don't know
Sumatriptan *(e.g. imigran, suvalan, sumigran)*	☐	☐	☐
Naratriptan *(e.g. naramig)*	☐	☐	☐
Zolmitriptan *(e.g. zomig)*	☐	☐	☐
Rizatriptan *(e.g. maxalt)*	☐	☐	☐

If triptan has never been tried, was this due to concerns about cardiovascular safety?

☐ Yes

☐ No

☐ Don't know

SAND abstract number 166: Hypertension, hypercholesterolaemia and diabetes

Organisation supporting this study: Sanofi-Aventis Australia Pty Ltd

Issues: The prevalence of hypertension, hypercholesterolaemia, diabetes and high cardiovascular risk among patients attending general practice; the prevalence of combinations of the morbidities; the types of medications being prescribed for these conditions; adjustment of glucose-lowering medication regimen at current encounter.

Sample: 2,789 respondents from 95 GPs; data collection period: 8/06/2010 – 12/07/2010.

Method: Detailed in the paper entitled *SAND Method 2010–11* at: <www.fmrc.org.au/publications/SAND_abstracts.htm>. High cardiovascular risk was defined according the PBS, and a card with details of criteria was provided (see below).

Summary of results

The age–sex distribution of the respondents did not differ from the distribution at all BEACH encounters, with the majority of patients (58.0%) being female and patients aged 65 years and over accounting for 29.9% of the sample.

Among the 2,789 patients, prevalence of diagnosed: hypertension was 28.0% (95% CI: 24.6–31.3); hypercholesterolaemia was 20.0% (95% CI: 17.4–22.6); type 1 diabetes was 0.8%; type 2 diabetes was 8.0% (95% CI: 6.5–9.4). The proportion of patients with any of the conditions (except Type 1 diabetes) rose significantly through the age groups, with the highest rates among patients aged 65 years and over. More than one-third of patients (37.4%, 95% CI: 33.5–41.3) had at least one of the conditions, and 4.4% of patients (95% CI: 3.3–5.6) had hypertension, hypercholesterolaemia and diabetes, including 11.5% of those aged 65–74 years and 9.6% of those aged 75 or more. There were 12.2% of patients (95% CI: 9.4–15.0) who met the PBS criteria for high cardiovascular risk.

After adjustment for annual attendance patterns by age and sex of patients, prevalence was estimated among those who attended at least once in the year as: hypertension – 18.8% (95% CI: 16.3–21.4); hypercholesterolaemia – 14.1% (95% CI: 11.9–16.2); type 1 diabetes – 0.8% (95% CI: 0.4–1.1); type 2 diabetes – 5.5% (95% CI: 4.3–6.7); and high cardiovascular risk was present in 8.1% (95% CI: 6.2–9.9) of the attending population.

There were 2,730 respondents to the question about BP-lowering and lipid-lowering medications, and 869 of them (31.8%) were taking at least one of these medications. Of the 869 patients taking medication, 39.7% were taking lipid and BP-lowering medications, 16.2% were taking lipid medications only, and 44.1% were taking BP-lowering medications only. There were 1,599 medications recorded of which lipid-modifying agents accounted for 31.5%. Of the 1,599 medications, atorvastatin was the most common currently taken, accounting for 13.4%, followed by perindopril (8.0%).

Of the 243 patients with diabetes, 234 gave details about current medication, and 194 (82.9%) of these patients were taking a total of 316 glucose-lowering medications. Metformin was the most common of these (38.6%), followed by gliclazide (21.8%). There were 172 patients taking glucose-lowering medications for whom information was given on adjustment of regimen at the current encounter. Of these, 11.0% had medication added, changed or ceased at that encounter.

The following pages contain the recording form and instructions with which the data in this abstract were collected.

High cardiovascular risk

Patients in any of the following high risk groups:

- Symptomatic coronary heart disease (CHD)
- Symptomatic cerebrovascular disease
- Symptomatic peripheral vascular disease
- Diabetes mellitus with microalbuminuria
- Diabetes mellitus in Aboriginal or Torres Strait Islander patients
- Diabetes mellitus in patients aged ≥60 years
- Family Hx CHD, symptomatic <55 years in two or more first degree relatives
- Family Hx CHD, symptomatic <45 years in one or more first degree relatives

If none of the above apply, patients in the following categories:

PATIENT CATEGORY	LIPID LEVEL
• Diabetes mellitus (not otherwise included)	TC >5.5mmol/L
• Aboriginal or Torres Strait Islander patients with hypertension	TC >6.5mmol/L **or** TC >5.5mmol/L and HDL- C <1mmol/L
• HDL-C <1mmol/L	TC >6.5mmol/L
• Familial hypercholesterolaemia • Family Hx CHD, symptomatic <60 years in one or more 1° relatives • Family Hx CHD, symptomatic <50 years in two or more 2° relatives	Patient aged <18yrs at Rx initiation: LDL-C >4mmol/L Patient aged ≥18yrs at Rx initiation: LDL-C >5mmol/L **or** TC >6.5mmol/L **or** TC >5.5mmol/L and HDL- C <1mmol/L
• Men aged 35-75 years (not included elsewhere) • Post-menopausal women <75 years	TC >7.5mmol/L **or** Trig >4mmol/L
• Patients not otherwise included	TC >9mmol/L **or** Trig >8mmol/L

Note: Family HX—family history, CHD—coronary heart disease; TC—total cholesterol; HDL-C—high density lipoprotein cholesterol; LDL-C—low density lipoprotein cholesterol; trig—triglyceride.

Source: Adapted from the PBS eiligibity criteria for lipid-lowering medications 'General statement for lipid-lowering drugs prescribed as pharmaceutical benefits' Available at: www.pbs.gov.au, accessed 21/4/10

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **HYPERTENSION, HYPERCHOLESTEROLAEMIA & DIABETES.**

You may tear out this page as a guide to completing the following section of forms.

INSTRUCTIONS

Please answer the following questions for **ALL** of the **next 30 PATIENTS in the order in which the patients are seen.**

Please **DO NOT select patients** to suit the topic being investigated.

Hypertension, diabetes & hypercholesterolaemia

Please advise whether this patient has been diagnosed with **hypertension, hypercholesterolaemia, diabetes,** and/or is at **high cardiovascular risk (see card for definition).** Tick as many as apply.

If the patient **does not have** any of the listed conditions please **end the questions here for this patient**.

BP-lowering and lipid-lowering medications

Please write the **name** and **form** and regimen (i.e. **strength, dose and frequency**) of the **medication(s) currently** taken by the patient for **management of their blood pressure (BP) and/or lipid levels**.

Please include medication(s) taken to lower lipid levels or BP regardless of whether the patient has been diagnosed with hypertension or hypercholesterolaemia (i.e. for cardiovascular risk management).

If the patient is **not** currently taking a BP-lowering or lipid-lowering medication please tick the box labelled '**NONE**'.

Glucose-lowering medication

Please write the **name, form** and regimen (i.e. **strength, dose and frequency**) of the **medication(s)** currently (i.e. taken prior to today's visit) for **management of blood glucose levels**. Please include both oral medications and injected medications.

If the patient is **not currently taking a medication** for blood glucose management please tick the box labelled '**NONE**'.

Changes to glucose-lowering medication

Please advise whether the patient's glucose medication regimen **will change as a result of today's visit**.

If the medication(s) or regimen **will stop or change**, please **continue** with the questions:

- **Cease medication:** If a medication is to be **stopped**, please **circle a number** to indicate which medication(s) (from those listed in Q.3) will cease.
- **Change to medication or regimen** includes: **adding another** medication to those currently being taken; **changing** a medication **for a different one**; changing the **dosage** of a current medication, either by an **increase** or **decrease**.

  If medication(s) or regimen is changing please **write the new medication(s) or regimen** in the space provided (i.e the medication to be added / changed to / dose changed). Only include the **additions/changes made today**.
- **No change:** If the medication(s) and regimen will **remain unchanged** you should **END the questions here**.

Does this patient have:

- ☐ Hypertension
- ☐ Hypercholesterolaemia
- ☐ Type 1 diabetes
- ☐ Type 2 diabetes
- ☐ High cardiovasc. risk* **see card*
- ☐ None of the above → **End questions**

BL123B

Current BP-lowering and/or lipid-lowering med(s): ☐ NONE

Name & Form	Strength	Dose	Freq

Current blood glucose medication (i.e. taken prior to this visit): ☐ NONE

	Name & Form	Strength	Dose	Freq
1.				
2.				
3.				
4.				

From today's visit, the patient's glucose-lowering regimen changed as follows:

- ☐ NO CHANGE → **End Qs**
- ☐ Cease medication - *Please circle to indicate which med:* ← **1 2 3 4** *(Nos correspond to previous Q)*
- ☐ Add/change med'n or regimen

Med'n added / changed to / dose changed:

Name & Form	Strength	Dose	Freq

SAND abstract number 167: Management of gout in general practice patients

Organisation supporting this study: Novartis Pharmaceuticals Australia Pty Ltd

Issues: The proportion of general practice patients treated for gout; number of gout episodes experienced in the previous 12 months; care sought by patients for gout; managements used for gout; contraindications in gout management.

Sample: 2,800 patients from 95 GPs; data collection period: 08/06/2010 – 12/07/2010

Method: Detailed in the paper entitled *SAND method 2010–11* at: <www.fmrc.org.au/publications/SAND_abstracts.htm>.

Summary of results

The age and sex distribution of the 2,800 respondents did not differ from that of patients at all 2009–10 BEACH encounters, with the majority (57.8%) being female.

Of the 2,800 respondents, 145 (5.2%, 95% CI: 4.0–6.4) had at some time been treated for gout. After adjustment for attendance rates by age and sex of patient, we estimated that 3.5% (95% CI: 2.5–4.4) of patients who attended the GP once that year had at some time been treated for gout. Treatment had most commonly occurred for older patients, with one in ten patients in the 65–74 years and 75+ age groups (10.9% and 11.4% respectively) having been treated for gout at some time. The sex-specific rate of gout treatment among male patients (9.0%, 95% CI: 6.8–11.3) was significantly higher than among females (2.4%, 95% CI: 1.4–3.3).

Of 136 respondents (of the 145 who had at some time been treated for gout), 39 (28.7%, 95% CI: 19.5–37.8) had had an episode of gout in the previous 12 months: 19 patients had had one episode and 12 had had two episodes. Of 131 respondents (multiple responses allowed), 34 (26.0%) had used a health service in the previous 12 months for gout management: 33 (25.2%) had visited a GP, one patient (0.8%) had visited a specialist, two patients (1.5%) had required a hospital visit and two visited an emergency department. There were 97 patients (74.1%) who had not used a health service for gout management in the previous 12 months.

Of the 39 patients who had had at least one episode of gout in the previous 12 months, 27 (69.2%) had used a health service: 26 (66.7%) had visited a GP to have their gout managed, one patient (2.6%) had visited a specialist, two patients (5.1%) had required a hospital visit and two patients visited an emergency department for their gout. There were 12 patients (30.8%) who had an episode of gout in the previous 12 months but not used a health service.

Of the 145 patients at some time treated for gout, management information was available for 128. Of these, 104 (81.3%) had received treatment for their most recent episode, and 24 patients (18.8%) had sought no treatment. Ninety-three patients (72.7%) had used medication to treat their most recent episode of gout, and 113 medications were recorded for these patients. Colchicine accounted for 32.7% and allopurinol for 28.3% of medications. The most common other treatment used for the episode of gout was lifestyle modification (39.1%).

GPs were asked to record whether the patient was unable to take specified medications for gout. Suitability of specified medications for gout was recorded for 159 patients, but the response rate varied for each medication. Contraindication or intolerance was indicated for: allopurinol for 9.4%; colchicine 10.1%; oral or systemic corticosteroids for 11.5%; and NSAIDS for 55.7% of cases.

The following pages contain the recording form and instructions with which the data in this abstract were collected.

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **MANAGEMENT OF GOUT.**

You may tear out this page as a guide to completing the following section of forms.

INSTRUCTIONS

Please answer the following questions for **ALL** of the **next 30 PATIENTS in the order in which the patients are seen.**

Please **DO NOT select patients** to suit the topic being investigated.

Gout

Please indicate whether this patient has ever been **treated for gout** by you or any health professional.

If '**no**' please **end questions here** for this patient.

Type of care sought

Please use the tick boxes to indicate whether in the **past 12 months** management of gout has involved a **GP visit**, **specialist visit**, **hospital admission**, and/or an **emergency department visit**.

Tick as many as apply.

Acute episodes

Please ask the patient approximately **how many acute episodes** of gout they have experienced in the **past 12 months**.

Treatment of gout

Please indicate how the most **recent episode** of gout was **managed:**

Medication

Please write the **name, form** and regimen (**dose and frequency**) of the **medication(s)** used to treat gout.

Please specify the **duration** (i.e. the number of days) **that each medication was taken** for management of the most recent gout episode.

Other treatment

Use the tick boxes to advise whether any **other treatments** were used for management of the most recent gout episode.

No treatment

If **no treatment** was used please tick the box labelled '**no treatment used**'.

Unsuitable medications

Please use the tick boxes to advise whether the patient is **unable to take** any of the **specified medications** for the treatment of gout because the medication is **contraindicated**, they are **intolerant** of or **unresponsive** to the medication.

Has this patient ever been treated for gout?

☐ Yes

☐ No→ **End questions**

BL123C

How many acute episodes of gout in the past 12 months?

_____ *(please specify)*

☐ None

☐ Don't know

In the past 12 mths has gout required:

☐ GP visit

☐ Specialist visit

☐ Hospital admission

☐ Emergency Dept visit

☐ None of the above

How was the most recent episode of gout managed? ☐ No treatment used

Medication:

Name & Form	Strength	Dose	Frequency	Duration of med use *(please specify no. days)*
				_____ days
				_____ days
				_____ days

Other treatment:

☐ Lifestyle modification

☐ Referral to specialist

☐ Referral to allied health professional

☐ Other: _____

Are any of the medications below unsuitable for use in this patient?

	Contraindicated/ intolerant	Unresponsive	No
Allopurinol	☐	☐	☐
NSAID	☐	☐	☐
Colchicine	☐	☐	☐
Oral corticosteroid	☐	☐	☐
Corticosteroid injection	☐	☐	☐

SAND abstract number 168: Management of major depression

Organisation supporting this study: AstraZeneca Pty Ltd (Australia)

Issues: Prevalence of major depression being managed in general practice patients and first, second and third lines of treatment for major depression, duration of and satisfaction with each line of treatment; and whether any changes occurred after third line of treatment.

Sample: 2,272 patients from 77 GPs; data collection period: 13/07/2010 – 16/08/2010

Method: Detailed in the paper entitled *SAND method 2010–11* at: <www.fmrc.org.au/publications/SAND_abstracts.htm>.

Summary of results

Age and sex were known for 2,255 patients and the age and sex distributions were not significantly different from those of patients at all 2009–10 BEACH encounters.

Of the 2,272 respondents in this sample, 330 patients (14.5%, 95% CI: 12.3–16.7) were currently being managed for major depression. Age was known for 327 of these patients. Patients aged < 15 years had the lowest prevalence with 0.6% and patients aged 45–64 had the highest prevalence with 19.7% (95% CI: 16.2–23.1) currently being managed for major depression. Sex was known for 328 patients with major depression. Females accounted for 71.3% of these patients and major depression was more prevalent among female patients (17.1%, 95% CI: 14.5–19.7) than for male patients (10.6%, 95% CI: 7.6–13.6).

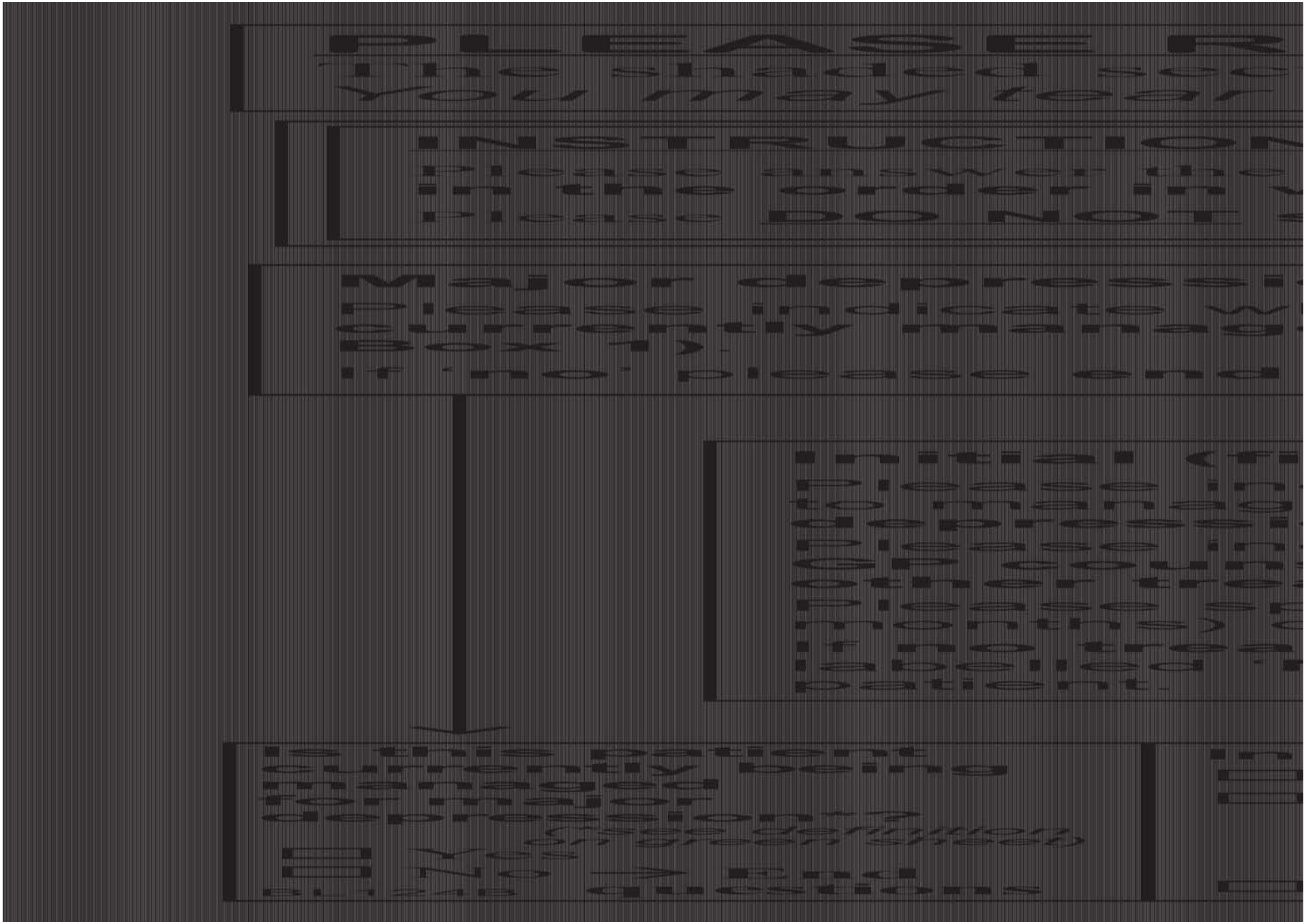
First line treatment was reported for 328 patients: four patients (1.2%) reported the first line treatment as 'None'; 191 patients (58.2%) were managed with counselling by the GP; 256 (78.1%) were managed with medication (selective serotonin reuptake inhibitors, SSRIs, made up 60.4% of these); 77 (23.5%) were managed with a referral (62.8% of which were to a psychologist). Duration of first line treatment was given for 208 patients – average duration was almost 22 months. Of 291 patients for whom satisfaction with first line treatment was recorded, it was satisfactory for 196 (67.4%) and not satisfactory for 95 patients (32.7%).

Of these 95 patients, 88 responded to the question on second line treatment, of which: 14 patients (15.9%) were managed with counselling by the GP; 73 (83.0%) were managed with medication (SSRIs made up 49.3% of these medications); 35 (39.8%) were managed with a referral (71.4% of which were to a psychologist). Duration of second line treatment was given for 65 patients – with an average duration of 10 months. Of 72 patients for whom satisfaction with second line treatment was recorded, it was satisfactory for 45 (62.5%) and not satisfactory for 27 (37.5%).

Of these 27 patients, 26 responded to the question on third line treatment with: eight patients (30.8%) managed with counselling by the GP; 20 (76.9%) managed with medication ('Other antidepressants' ATC code N06AX, accounted for 48.0% of these medications); 15 (57.7%) managed with a referral (68.8% of which were to a psychologist). Duration of third line treatment was indicated for 26 patients – with an average duration of 15 months.

Of the 26 patients on third line treatment, 24 responded to the further change since third line treatment question. A further change since the third line of treatment was reported for only 3 (12.5%) of these patients.

The following pages contain the recording form and instructions with which the data in this abstract were collected.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for major
depression*?
(see definition
on green sheet)
Yes
No → End
questions

SAND abstract number 169: Hypertension, comorbidity and blood pressure control

Organisation supporting this study: Merck Sharp & Dohme (Australia) Pty Ltd

Issues: Prevalence of diagnosed hypertension among patients attending general practice; medications taken for hypertension; comorbidities in patients with hypertension; current blood pressure (BP) and level of control; management steps if BP was not well-controlled.

Sample: 2,350 patients from 79 GPs; data collection period: 13/07/2010 – 16/08/2010

Method: Detailed in the paper entitled *SAND Method 2010–11* at: <www.fmrc.org.au/publications/SAND_abstracts.htm>. BP levels were defined using the National Heart Foundation guidelines available from <www.heartfoundation.org.au/SiteCollectionDocuments/HypertensionGuidelines2008to2010Update.pdf>

Summary of results

Sex distribution of patients was no different from the total BEACH sample in 2009–10. However, there was a significantly smaller proportion of patients aged 45–64 years (24.5%, 95% CI: 22.7–26.3) compared with the total sample (28.2%, 95% CI: 27.7–28.8).

Among the 2,350 respondents, the prevalence of diagnosed hypertension was 28.3% (95% CI: 24.5–32.0). After adjustment for annual attendance patterns by age-sex of patient, prevalence of hypertension among those attending general practice at least once was 18.9% (95% CI: 16.0–21.8). Among adults in the sample, prevalence rose significantly through the middle age groups, and was highest among patients aged 75 years and over (71.1%). More than 70% of patients with hypertension were aged 65 years or older.

Among 655 respondents with hypertension, 93.7% were on at least one medication. A total of 1,013 medications were listed: ACE inhibitors accounted for 20.4%, and angiotensin II antagonists accounted for 17.5% of these medications. At the generic level, perindopril and irbesartan were the most commonly recorded.

Comorbidity was recorded for 610 respondents with hypertension, 500 (82.0%) of whom had at least one comorbidity: 26.9% had diabetes; 26.7% had coronary heart disease; 11.5% had cerebral vascular disease; 7.4% had peripheral vascular disease; 15.1% had family history of coronary artery disease; 48.5% had dyslipidaemia; 1.8% had proteinuria; 9.2% had chronic kidney disease. There were 21.8% of patients with an other chronic disease (+/- one or more of the above), atrial fibrillation being the most common of these.

Of 638 patients with hypertension whose BP was recorded on the day of the encounter, 47.7% had BP levels in the high-normal category, 44.7% had levels that were higher than high-normal, and 7.7% had normal BP.

Level of BP control was given for 625 patients with hypertension. GPs considered 75.5% of these patients to have well-controlled BP and 24.5% to have not well-controlled BP. For 33.1% of 148 respondents, the main reason BP was not well-controlled, was current medication not efficacious, followed by patient non-compliance (14.2%).

Of 153 patients with BP not well-controlled, the next management step was recorded for 144. For 25.0% of these patients, no change was planned; for 5.6% the next step was to add a diuretic; for 6.9% to add a calcium channel blocker; for 1.4% to add a beta blocker; for 15.3% it was dose titration. Other management steps recorded were prompt review of BP, 24 hr BP monitor and compliance counselling.

The following pages contain the recording form and instructions with which the data in this abstract were collected.

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INSTRUCTION

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with

hypertension?

Yes

No → End

questions

BL1246

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Name

No

SAND abstract number 170: Use of SSRIs and/or SNRIs in general practice patients

Organisation supporting this study: Pfizer Australia Pty Ltd

Issues: Proportion of general practice patients taking selective serotonin reuptake inhibitors (SSRIs) and/or selective noradrenaline reuptake inhibitors (SNRIs); current prescribed regimens of these medications; conditions being managed with SSRIs/SNRIs; factors contributing to initiation of SSRIs/SNRIs; severity of depression and prevalence of recurrent depression in patients taking SSRIs/SNRIs.

Sample: 2,847 patients from 100 GPs; data collection period: 17/08/2010 – 20/09/2010

Method: Detailed in the paper entitled *SAND method 2010–11* at: <www.fmrc.org.au/publications/SAND_abstracts.htm>. Severity of depression scale was that used by Ellis & Smith (2002). *Treating depression: the beyondblue guidelines for treating depression in primary care.* MJA 176(10 Suppl):S77–S83. Levels defined as: Mild = mild depression without complications; Moderate I = moderate depression (including with co-morbid anxiety) and dysthymia; Moderate II = moderate depression with comorbid substance misuse; Severe I = severe depression with melancholia; Severe II = psychotic depression, severe depression with risk of suicide, and atypical depression.

Summary of results

The age and sex distribution of patients was not significantly different from that of patients at all BEACH encounters in 2009–10.

Of the 2,847 respondents, 227 patients (8.0%) were currently taking an SSRI, 93 (3.3%) were currently taking a SNRI and one patient was taking both. In total, 11.3% were taking at least one of these medications. Sex specific rates showed a significantly higher proportion of females (13.0%, 95% CI: 11.1–14.8) taking SSRIs/SNRIs than males (8.9%, 95% CI: 7.0–11.0). There were only 2 patients aged < 15 years taking these medications but there were no significant differences in other patient age groups.

Of 328 medications recorded for 320 respondents, the most commonly recorded was sertraline (22.6%), followed by venlafaxine (17.4%). Of 319 respondents, 273 (85.6%) had been prescribed the SSRI/SNRI for depression; 82 (25.7%) were prescribed the SSRI/SNRI for anxiety, and 11 patients (3.5%) for bipolar disorder. For 18 patients, other conditions were listed as the reason for the prescription, most commonly obsessive-compulsive disorder.

There were 310 respondents who described factors contributing to initiation of SSRI /SNRI: GP preference was reported for 47.7%; guideline recommendation for 20.3%; non-response to previous medication was reported for 14.2%; patient preference for 7.4%; side-effects of previous medication for 7.4%; to avoid potential side-effects for 6.5%; and interaction with previous medication had been the reason for initiation for 4 patients (1.3%).

Of the 273 patients who reported having the SSRI/SNRI prescribed for depression, 263 responded to the question on severity of depression. The majority (44.1%) had Moderate I level; 25.1% had Moderate II level; 13.3% had Mild depression; 12.6% had Severe I level; and 4.9% had Severe II level depression.

Of the 273 patients who reported having the SSRI/SNRI prescribed for depression, 225 responded to the question on recurrent depression. Of these, 69.8% had recurrent depression, 20.4% did not have recurrent depression, and 9.8% did not know.

The following pages contain the recording form and instructions with which the data in this abstract were collected.

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **USE OF SSRI AND SNRI MEDICATION.**

You may tear out this page as a guide to completing the following section of forms.

INSTRUCTIONS

Please answer the following questions for **ALL** of the **next 30 PATIENTS in the order in which the patients are seen.**

Please **DO NOT select patients** to suit the topic being investigated.

SSRI and SNRI use

Please use the tick boxes to indicate whether this patient is **currently** taking a **SSRI** (selective serotonin reuptake inhibitor) or a **SNRI** (serotonin noradrenaline reuptake inhibitor).

If this patient is **not** taking either a SSRI or SNRI please **end the questions here** for this patient.

SSRI/SNRI regimen

For patients that are currently taking a SSRI or SNRI please write the **name, form** and regimen (i.e. **strength, dose and frequency**) of the SSRI/SNRI medication.

SSRI/SNRI indication

Please use the tick boxes to specify the **condition** the SSRI or SNRI was prescribed to manage. If the condition is not listed please tick the box labelled other and write the condition in the space provided.

Severity of depression

Please use the tick boxes to indicate the severity** of the patient's depression.

Mild	Mild depression without complications
Moderate I	Moderate depression (including with comorbid anxiety) and dysthymia
Moderate II	Moderate depression with comorbid substance misuse
Severe I	Severe depression with melancholia
Severe II	Psychotic depression, severe depression with risk of suicide, and atypical depression

** Source: Ellis PM and Smith DAR. Treating depression: the beyondblue guidelines for treating depression in primary care. MJA 2002; 176(10 Suppl):S77-S83.

Factors contributing to SSRI/ SNRI initiation

Please use the tick boxes to indicate **why** the current **SSRI or SNRI was initiated** for this patient. Tick all that apply.

Recurrent depression

Please use the tick boxes to indicate whether this patient has recurrent depression.

Is this patient currently taking:

- ☐ SSRI (selective serotonin reuptake inhibitor)
- ☐ SNRI (serotonin noradrenaline reuptake inhibitor)
- ☐ Neither of the above — **End questions** ←

BL125B

If taking a SSRI / SNRI please specify:

1. Medication regimen:

Name & Form	Strength	Dose	Frequency

2. SSRI / SNRI was prescribed for:

- ☐ Depression
- ☐ Anxiety disorder
- ☐ Bipolar disorder
- ☐ Other problem: _____ *(please specify)*

What factor(s) contributed to the decision to initiate the current SSRI or SNRI for this patient?

- ☐ Guideline recommend'n
- ☐ Patient preference
- ☐ GP preference
- ☐ Avoid potential side effects/interactions
- ☐ Interaction with previous medication
- ☐ Side effect(s) of previous medication
- ☐ Patient did not respond to previous medication
- ☐ Other: *(please specify)* _____

For patients with depression:

Severity is: *(see green sheet for definition)*

- ☐ Mild
- ☐ Moderate I
- ☐ Moderate II
- ☐ Severe I
- ☐ Severe II

Does this patient have recurrent depression?

- ☐ Yes
- ☐ No
- ☐ Don't know

SAND abstract number 171: Influenza and pneumococcal vaccination among general practice patients

Organisation supporting this study: CSL Ltd

Issues: The proportion of general practice patients who had discussed influenza vaccination with their GP in the past 12 months or pneumococcal vaccination in the past 5 years; who initiated the discussion(s); presence of influenza or pneumococcal infection risk factors; vaccination status; source of vaccine supply; reason(s) that influenza or pneumococcal vaccine was not given in unvaccinated patients.

Sample: 100 GPs recorded influenza data for 2,946 patients and pneumococcal data for 2,873 patients; data collection period: 17/08/2010 – 25/10/2010.

Method: Detailed in the paper entitled *SAND method 2010–11* at: <www.fmrc.org.au/publications/SAND_abstracts.htm>. **Method for this study**: Risk factors for influenza and pneumococcal infection‡ were supplied on a card.

Summary of results

The age and sex distributions of the 2,946 patients who responded to the question about discussion of influenza vaccination and the 2,873 patients who responded about pneumococcal vaccination did not differ from all patients at 2009–10 BEACH encounters.

Influenza vaccination: GPs discussed influenza vaccination with 1,268 patients (43.0%, 95% CI: 38.5–47.6) in the previous 12 months. GPs initiated the discussion in most cases (83.6% of 1,236 respondents). Influenza infection risk factors were given for 1,203 patients, and at least one risk factor was present for 87.2%. Multiple responses were allowed. The most common risk factor was being aged 65 years and over (66.3%), followed by chronic heart disease (18.5%), diabetes (13.4%), chronic lung disease (11.6%) and other chronic diseases (11.9%).

Of 1,222 patients who provided vaccination status, 1,116 were vaccinated (91.3%), 105 were not (8.6%), and status was not known for 1 patient. Of 1,080 vaccinated respondents, 81.4% were supplied the vaccine free of charge (i.e. government supplied), for 5.7% the vaccine was PBS subsidised, and for 12.9% it was fully privately funded. Of 100 unvaccinated respondents, 54 gave 'patient objection' as the reason for not being vaccinated, and 20 patients were considered 'not at risk'.

Pneumococcal vaccination: GPs discussed pneumococcal vaccination with 823 patients (28.7%, 95% CI: 24.6–32.7) in the previous 5 years. GPs initiated the discussion in most cases (92.5% of 759 respondents). Pneumococcal infection risk factors were given by 802 patients, and at least one risk factor was present for 96.0%. Multiple responses were allowed. The most common risk factor was being aged 65 years and over (81.9%), followed by chronic heart disease (22.1%), diabetes (15.2%), chronic lung disease (12.6%) and other chronic diseases (10.1%).

Of 782 patients who provided vaccination status, 661 were vaccinated (84.5%), 118 were not (15.1%), and status was not known for 3. Of 638 vaccinated respondents, 93.0% were supplied the vaccine free of charge, for 4.6% the vaccine was PBS subsidised, and for 2.5% it was fully privately funded. Of 105 unvaccinated respondents, 59 (56.2%) gave 'patient objection' as the reason for not being vaccinated, and 16 (15.2%) were considered 'not at risk'.

‡ Adapted from National Health and Medical Research Council. Australian Immunisation Handbook 9th Edition 2008.

The following pages contain the recording form and instructions with which the data in this abstract were collected.

Risk factors for influenza and pneumococcal infection

This card lists the risk factors and indications for influenza and/or pneumococcal vaccination.

Please circle the numbers on the recording form to indicate whether this patient has any of the listed risk factors or indications.

1. ≥65 years of age
2. ≥50 years of age and Aboriginal and/or Torres Strait Islander
3. Childhood immunisation schedule
4. Chronic heart disease
5. Chronic lung disease (including emphysema, severe asthma)
6. Diabetes
7. Other chronic disease(s) e.g. chronic renal failure
8. Immune deficiency (e.g. HIV, malignancy)
9. Tobacco smoker
10. Pregnancy
11. Residents of nursing home or other long-term facilities
12. People in contact with high risk patients (e.g. staff of nursing homes)
13. Cerebrospinal fluid leak
14. Asplenia (functional or anatomical)
15. Aboriginal and/or Torres Strait Islander 15-49 years with conditions placing them at increased risk of pneumococcal infection

Source: adapted from the National Health and Medical Research Council (NHMRC) Australian Immunisation Handbook 9th Edition 2008

SAND abstract number 172: Diabetes management in general practice patients

Organisation supporting this study: Sanofi-Aventis Australia Pty Ltd

Issues: Prevalence of Type 1 (T1D) and Type 2 diabetes (T2D) among general practice patients. For patients with diabetes: the most recent HbA1c and when measured; proportion with a self blood glucose monitoring (SBGM) machine; type of machine used; which health professional advised purchase and who educated the patient regarding use; proportion of patients with diabetes on medication for management of blood glucose; type of medication; dose; and frequency of combined therapy.

Sample: 2,839 patients from 72 GPs; data collection period: 21/09/2010 – 25/10/2010.

Method: Detailed in the paper entitled *SAND Method 2010–11* available at: <www.fmrc.org.au/publications/SAND_abstracts.htm>.

Summary of results

The age distribution of patients differed from the distribution for patients at all BEACH encounters 2009–10, with a greater proportion of patients aged 25–44 years. The sex distribution did not differ from that of patients at all BEACH encounters, with the majority (59.5%) of patients being female.

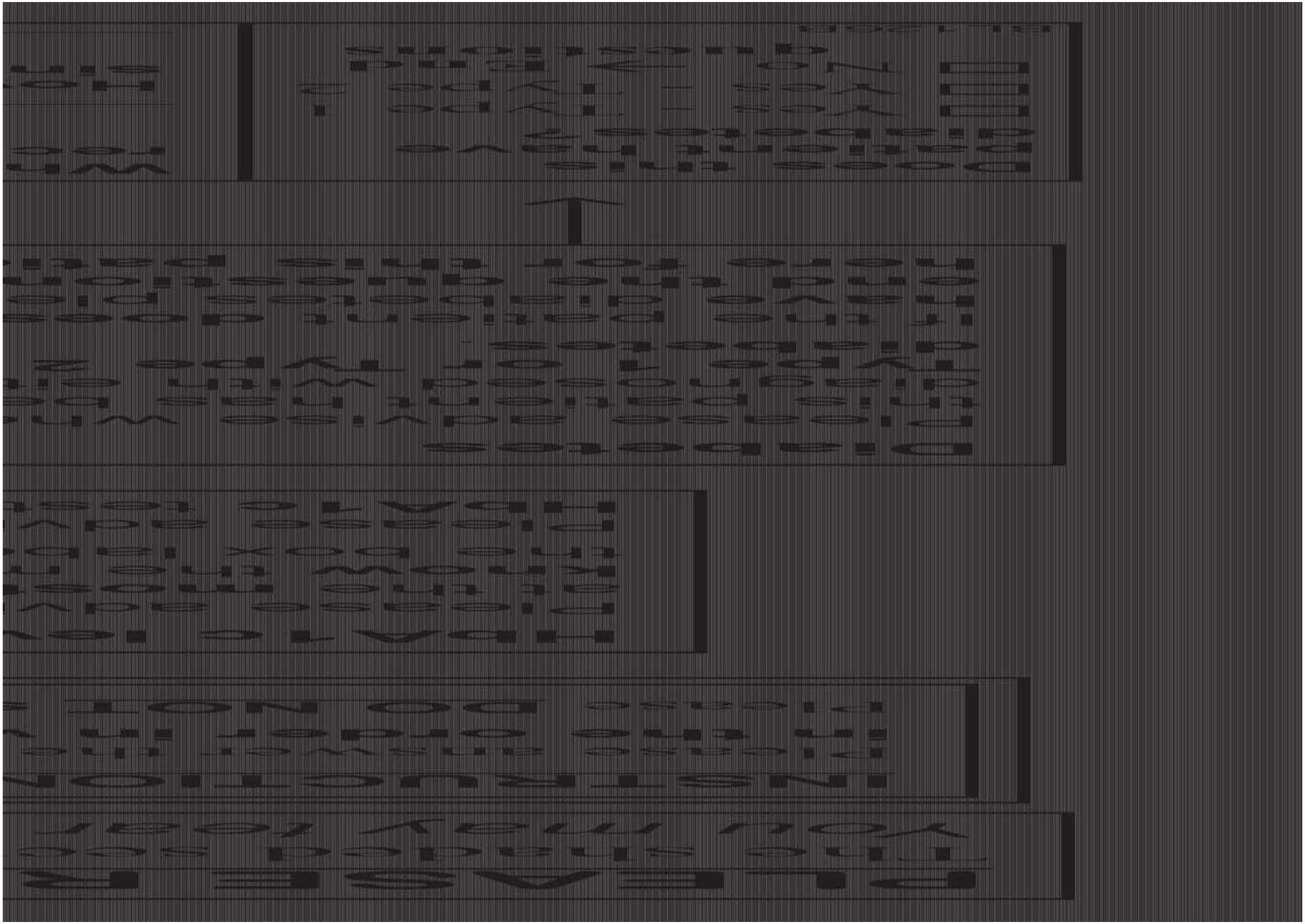
Among the 2,839 respondents, 214 had diagnosed diabetes, prevalence being 7.5% (95% CI: 6.4–8.7). Prevalence of T1D was 1.0% (95% CI: 0.5–1.4) and of T2D was 6.6% (95% CI: 5.4–7.7). There was no significant difference in prevalence between the sexes. Prevalence increased significantly with age to 18.6% of patients aged 65–74 years and 19.1% in patients aged 75 or more.

Information on most recent HbA1c was known for 189 diabetes patients, and of these, 47.1% had HbA1c of less than 7%. Among 188 patients who knew the time since last testing, 46.3% had been tested less than three months ago, 38.3% 3–6 months ago and 15.4% more than six months ago.

Of 211 respondents with diabetes, 180 (85.3%) had a self blood glucose monitoring (SBGM) machine. Of 179 of those, 30.7% used it 2–3 times daily, and 24.6% used it once daily. Among 176 respondents with a SBGM machine, the machine was recommended by a GP for 40.3% of patients, by a diabetes educator for 35.2% and by an endocrinologist for 10.8% of patients. Education about the machine was provided by a diabetes educator for 59.1% of patients, and by a GP for 19.9% of patients.

Medication was reported for 212 respondents with diabetes, 180 (84.9%) were currently taking medication for the management of blood glucose and 32 patients (15.1%) were not. There were 128 (60.4%) patients currently taking only oral medication for the management of their blood glucose, 27 patients (12.7%) were taking only insulin and 25 (11.8%) were taking insulin and an oral medication. Of the 180 patients currently taking blood glucose management medications, 127 (70.6%) were taking metformin at a median prescribed daily dose (PDD) of 1500 mg; and 50 (27.8%) were taking gliclazide at a median PDD of 60 mg. Of these 180 patients on blood glucose medications 103 (57.2%) were taking mono therapy, 59 (32.8%) dual therapy, and 18 (10.0%) triple therapy.

The following pages contain the recording form and instructions with which the data in this abstract were collected.



SAND abstract number 173: Type 2 diabetes resource use

Organisation supporting this study: Family Medicine Research Centre

Issues: Prevalence of diagnosed diabetes among patients attending general practice; for patients with Type 2 diabetes (T2DM): age and sex, body mass index (BMI), most recent HbA1c and time since it was measured, time since diagnosis; number of GP visits and number at which T2DM was managed in the previous 12 months; patients' comorbidities and allied health professional (AHP) use; proportion of patients on a MBS incentive scheme.

Sample: 4,626 patients from 182 GPs; data collection periods: 21/09/2010 – 25/10/2010 and 18/01/2011 – 21/02/2011.

Method: Detailed in the paper entitled '*SAND Method 2010–11*' on this website: <www.fmrc.org.au/publications/SAND_abstracts.htm>.

Summary of results

Age distribution of patients was no different from the total BEACH sample in 2010–11. However, there was a significantly smaller proportion of male patients (38.1%, 95% CI: 35.6–40.5) than in the total BEACH sample (42.9%, 95% CI: 42.0–43.7).

Among the 4,626 respondents, combined prevalence of diagnosed Type 1 (1.0%, 95% CI: 0.7–1.4) and T2DM (7.6%, 95% CI: 6.5–8.6) (n = 350) was 8.6%. After adjustment for annual attendance patterns by age-sex of patient, prevalence of T2DM among those attending general practice at least once in the year was estimated as 5.5% (95% CI: 4.7–6.4). The estimated prevalence in the Australian population was 5.1% (95% CI: 4.3–5.8). The highest age-specific prevalence of diagnosed T2DM was among patients aged 65–74 years (17.2%), and those aged 75 years or more (14.9%) Prevalence was significantly higher among males (9.7%; 95% CI: 8.2–11.3) than among females (6.2%; 95% CI: 5.2–7.3).

The mean BMI of 337 respondents with T2DM was 31.0: 18.1% of patients were in the normal BMI range and 81.0% were overweight (BMI 25–< 30) (33.5%), obese (BMI 30–< 35) (23.4%) or morbidly obese (BMI > 35) (24.0%). The most recent HbA1c was known for 311 patients, and their mean HbA1C was 7.2. However 41.5% of results were between 6 and 6.99, and 28.3% were between 7 and 7.99. For 315 respondents, average time since last tested was 4.3 months. For 61.0% of 341 respondents, it was more than six years since first being diagnosed with T2DM, for 22.3% diagnosis was 3–5 years earlier, and for 11.1% it was 1–2 years earlier.

Number of GP visits was known for 329 patients, and the mean number of visits to a GP in the previous 12 months was 13.5. After adjustment (see above), the estimated average number of visits for all general practice patients with T2DM was 8.4 times per year. Among 306 sampled respondents, T2DM had been managed on average at 5 of their 13.5 GP visits.

At least one of 12 listed chronic diseases (see recording form) had been diagnosed in 95.1% of the sample, and the average number of comorbidities was 3.4 per patient. Hypertension was the most common, present among 73.1% of patients with T2DM, followed by dyslipidaemia (62.3%), osteoarthritis (40.6%) and ischaemic heart disease (31.7%).

Of 314 respondents with T2DM: 51.3% had visited a podiatrist, averaging 140 visits per 100 visiting patient in the year; 29.6% had visited a dentist (67 visits per 100 visiting patients); 27.1% had visited a diabetes educators (53 visits per 100 visiting patients). Sixty-four per cent of patients were currently under a GP management plan, 49.4% were under a team care arrangement, and 3.1% were currently under a mental health plan.

The following page contains the recording form and instructions with which the data in this abstract were collected.

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **PATIENTS WITH DIABETES USE OF RESOURCES.**

You may tear out this page as a guide to completing the following section of forms.

INSTRUCTIONS

Please answer the following questions for **ALL** of the **next 30 PATIENTS in the order in which the patients are seen.**

Please **DO NOT select patients** to suit the topic being investigated.

Please use your own knowledge, patient knowledge and medical records as you see fit, in order to answer these questions.

Height/weight

Ask the patient:

What is their height (without shoes)?*

What is their weight (unclothed)?*

Conversion tables from stone/pounds to kilograms and feet/inches to centimetres are provided.

** You are NOT REQUIRED to weigh or measure the patient, but if the patient is unsure, you may either do so or take information from the medical records.*

Diabetes

Please advise whether this patient has been diagnosed with either **Type 1 or Type 2 diabetes**.

If the patient **does not have** diabetes please **end the questions here for this patient**.

HbA1c level

Please advise the patient's HbA1c **levels** at the **most recent testing**. If you **do not know** the most recent HbA1c result, please tick the box labelled '**don't know**'.

Please advise **how long ago** the **last HbA1c** test was ordered.

Duration of diabetes

Please use the tick boxes to advise how many **years since** this patient was **diagnosed with diabetes**.

Frequency of visits and of management

Please write the approximate **number of times** the patient has **visited a GP for any reason** in the **past 12 months**. Use patient recall, your notes or knowledge, to give the best estimate.

Please also write the approximate **number of GP visits** at which their **diabetes was managed** during that time. If you do not know the number for either, please tick the box labelled 'don't know'.

Comorbidities

Please use the tick boxes to advise whether the patient has also been diagnosed with any of the listed **comorbidities**.

Tick as many as apply.

Note: IHD=ischaemic heart disease, COPD=chronic obstructive pulmonary disease, GORD=gastro-oesophageal reflux disease, CKD=chronic kidney disease.

Number of allied health visits

For each of the listed allied health professionals please write the approximate **number of times** the patient has **visited (for any reason)** in the **past 12 months**. If **none** please write '**0**' in the space provided.

Use patient recall, your notes or knowledge, to give the best estimate.

If the patient has visited an allied health professional **not listed** please **specify the type** of allied health professional and the **number of visits** (in past 12 months) this patient had in the space provided.

MBS items used

Please indicate whether this patient **currently** has a **GP management plan**, a **team care arrangement**, and/or a **mental health care plan** for any condition.

Tick all that apply

Does this patient have diabetes?

- ☐ Yes - Type 1
- ☐ Yes - Type 2
- ☐ No → **End questions**

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Patient reported

Height: _____ cm

Weight: _____ kg

What was the most recent HbA1c result?

_____ % ☐ **Don't know**

How many months since last HbA1c?

_____ mths ☐ **Don't know**

How long ago was diabetes diagnosed?

- ☐ < 12 months
- ☐ 1-2 years
- ☐ 3-5 years
- ☐ 6-10 years
- ☐ >10 years

Approx. how many times has this patient visited a GP in the past 12 months?

No. _____ ☐ None ☐ Don't know

At approx. how many of these was diabetes managed?

No. _____ ☐ None ☐ Don't know

Does this patient have:

- ☐ Hypertension
- ☐ IHD
- ☐ Dyslipidaemia
- ☐ Depression
- ☐ Anxiety
- ☐ Osteoarthritis
- ☐ Chronic back pain
- ☐ Other cardiovasc. disease
- ☐ COPD / Asthma
- ☐ GORD
- ☐ CKD
- ☐ Osteoporosis

Approx how many times has patient seen *(in past 12 mths)*:

	No. of visits
Dietitian	_____
Psychologist	_____
Podiatrist	_____
Dentist	_____
Diabetes educator	_____

Other allied hlth professionals:

1. _____ No. visits: _____
2. _____ No. visits: _____

Does the patient currently have:

- ☐ GP management plan
- ☐ Team care arrangement
- ☐ Mental health care plan

SAND abstract number 174: Atrial fibrillation/flutter in general practice patients

Organisation supporting this study: Bayer Australia Ltd

Issues: The proportion of general practice patients with atrial fibrillation or atrial flutter (AF/flutter). For patients with AF/flutter: prevalence of diabetes, hypertension, congestive heart failure, cerebrovascular accident/transient ischaemic attack (CVA/TIA); CHADS score risk of stroke; current AF/flutter medications; warfarin use; INR monitoring.

Sample: 2,402 patients from 83 GPs; data collection period: 26/10/2010 – 29/11/2010

Method: Detailed in the paper entitled *SAND method 2010–11* at: <www.fmrc.org.au/publications/SAND_abstracts.htm>. **Method for this study:** Risk of stroke in AF/flutter patients was calculated using the CHADS2 score.‡

Summary of results

The age and sex distribution of the 2,402 respondents did not differ from the distribution for all 2009–10 BEACH encounters, with the majority (60.8%) being female.

Of the 2,402 respondents, 101 (4.2%, 95% CI: 3.2–5.2) had AF/flutter. AF/flutter was rare in younger age groups (0.2% in 25–44 and 1.5% in 45–64 age group), but rose significantly to 7.3% among 65–74 year olds and 18.0% of those aged 75 or more. Males were significantly more likely to have AF/flutter (6.2%, 95% CI: 4.5–7.9) than females (3.0%, 95% CI: 2.0–4.0).

Of 95 AF/flutter patients for whom co-morbidities were reported, 82 (86.3%) had at least one of the listed morbidities, 68.4% had hypertension, 29.5% had congestive heart failure, 22.1% had diabetes and 19.0% had CVA/TIA. These co-morbidities were used to calculate (a CHADS2 score) risk of stroke in AF/flutter patients. Most AF/flutter patients were at moderate risk (59.0%, n = 56 of 95) and one-third (35.8%, n = 34) were at high-risk of stroke.

Details of current AF/flutter medications were available for 99 of the 101 patients with AF/flutter. Most (94.9%, n = 94) were on medication, with 40.4% taking one medication, 39.4% taking two, and 15.2% taking three or more. In total 165 medications were recorded for 94 medicated AF/flutter patients, the most common being antithrombotic agents (51.5% of all medications) comprising warfarin (42.4%) and aspirin (6.1%), followed by cardiac therapy (22.4%) comprising digoxin (16.4%), and beta blocking agents (20.0%).

Among the 99 respondents with AF/flutter, 70 (70.7%) were taking warfarin. Three-quarters of these patients had been taking warfarin for more than six months, and for two-thirds warfarin was initiated by a cardiologist. For 28 of the 29 patients not on warfarin, reasons for not taking the drug were given. The main being patient refusal, followed by bleeding risk.

Of the 70 AF/flutter patients using warfarin, details of INR monitoring were available for 69. The most common timing of INR monitoring was every 28 days/four weeks, accounting for 30 (44.1%) of AF/flutter patients on warfarin, followed by 17.6% every 15 days/two weeks and 11.8% every seven days/one week. For 15 (21.4%) of these patients, a face-to-face contact and point of care testing was recorded, and this was the most common combination of events per monitoring episode. INR stability information was available for 67 of the 70 patients. For three-quarters of these patients, less than 25% of their INR results were outside the 2–3 range in the past six months.

‡ Gage BF, Waterman AD, Shannon W, Boechler M, Rich MW, Radford MJ. Validation of clinical classification schemes for predicting stroke: results from the National Registry of Atrial Fibrillation. JAMA 2001;285(22):2864–70.

The following pages contain the recording form and instructions with which the data in this abstract were collected.

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **ATRIAL FIBRILLATION/FLUTTER.**

You may tear out this page as a guide to completing the following section of forms.

INSTRUCTIONS

Please answer the following questions for **ALL** of the **next 30 PATIENTS in the order in which the patients are seen.**

Please **DO NOT select patients** to suit the topic being investigated.

Atrial fibrillation and atrial flutter

Please use the tick boxes to advise whether this patient has **atrial fibrillation** or **atrial flutter**.

If the patient **does not have** either atrial fibrillation or atrial flutter you should **end the questions here**.

Medications for atrial fibrillation/flutter

Please advise which **medication(s)** for **atrial fibrillation/flutter** this patient is currently taking.

Please include any anticoagulants.

Duration of warfarin use

For patients taking warfarin, please use the tick boxes to indicate **how long** this patient has been **taking warfarin**.

Initiation of warfarin

Please use the tick boxes to indicate which **health care professional initiated warfarin** for this patient.

If the **type of professional** is **not listed** please tick '**other**' and write it in the space provided. If warfarin was initiated in a health care setting (e.g. hospital) and the type of health care professional is unknown please write the setting (e.g. 'hospital') in the space provided.

INR stability

Please specify in the **past 6 months** approximately **how many** of this patient's **INR results** were **outside** the 2-3 range.

Comorbidities

Please use the tick boxes to advise whether the patient has also been **diagnosed** with any of the **listed conditions**.

Note: CVA=cerebrovascular attack. TIA=transcient ischaemic attack.

Patients not taking warfarin

If the patient is not currently taking warfarin please use the tick boxes to indicate **why warfarin is not used**. If the reason is not listed please specify the reason in the space provided.

Tick all that apply.

Monitoring of warfarin

Please specify **how often** this patient's **INR is monitored**. For example, for patients who have their INR tested every month please write:

4 days / (weeks)

Please use the tick boxes to indicate **who orders the INR monitoring** tests.

For **each monitoring episode** (i.e. the INR test, communicating results and dosage advice) approximately **how many contacts** (i.e. face-to-face visits, phone calls) and **INR tests** (either lab-based or point of care tests) **were required.**

Note: PoCT refers to point of care INR testing.

Does this patient have:	**Does the patient also have:** *(Tick all that apply)*	**Current medications for AF/flutter are:** *(please specify medication name)*	**For patients NOT USING warfarin, why not?**	**For patients USING warfarin:**		**INR monitoring is usually done every:**	**Each monitoring episode (including giving results) involves approx. how many:**	**In the past 6 mths how many INR results were outside the 2-3 range?**
				How long has patient been taking warfarin?	**Who initiated the warfarin?**			
☐ Atrial fibrillation (AF)	☐ Diabetes	_____	☐ Patient refusal	☐ <3 months	☐ GP	_____ days / weeks *(Please circle)*	Face-to-face consults _____	☐ <25% ☐ >75%
☐ Atrial flutter	☐ Hypertension	_____	☐ High bleeding risk	☐ 3-6 mths	☐ Cardiologist	**Ordered by?**	Phone calls _____	☐ 25-50% ☐ Don't know
☐ Neither of the above → **End questions**	☐ Congestive heart failure	_____	☐ Other reason(s):	☐ >6 mths	☐ Neurologist	☐ GP	INR tests (at lab) _____	☐ 51-75%
	☐ CVA / TIA	_____	_____ *(please specify)*	☐ Don't know	☐ Other: _____ *(please specify)*	☐ Specialist	INR tests (PoCT) _____	
	☐ None of the above	☐ **No medication**				☐ Other		

BL127B

SAND abstract number 175: Pertussis and persistent cough among general practice patients

Organisation supporting this study: GlaxoSmithKline Australia Pty Ltd

Issues: The vaccination status of general practice patients for pertussis, diphtheria and tetanus; whether the patient has close contact with an infant aged less than 6 months and the nature of the patient's relationship with the infant; prevalence of pertussis; prevalence of a discreet coughing episode lasting more than 3 weeks (referred to as persistent cough) in the previous 12 months; time taken off work or study because the patient or someone in their care had pertussis or persistent cough.

Sample: 2,422 patients from 82 GPs; data collection period: 26/10/2010 – 29/11/2010

Method: Detailed in the paper entitled *SAND method 2010–11* at: <www.fmrc.org.au/publications/SAND_abstracts.htm>.

Summary of results

The age and sex distributions of the patients who responded to the question about vaccination status did not differ from all patients at 2009–10 BEACH encounters.

Pertussis vaccination status was provided by 2,389 respondents. Of these, 751 patients (31.4%, 95% CI: 27.7–35.2) had received a pertussis vaccination in the previous ten years, 1,393 (58.3%) had not been vaccinated, and 245 (10.3%) did not know if they had been vaccinated. Patient age was recorded for 2,376 of these respondents. The proportion vaccinated decreased with age: 94.3% of patients aged 0–14 years, 65.6% of those aged 15–24 years, 29.3% of 25–44 year olds, 15.7% of 45–74 year olds and 11.4% of those aged 75 years and over.

Diphtheria vaccination status was provided for 2,364 patients. Of these, 1,042 patients (44.1%, 95% CI: 40.2–47.9) had been vaccinated in the previous ten years, 1,083 (45.8%) had not been, and 239 (10.1%) did not know. Tetanus vaccination status was recorded for 2,371 patients. Of these, 1,149 patients (48.5%, 95% CI: 44.7–52.3) had been vaccinated in the previous ten years, 1,000 (42.2%) had not been, and 222 (9.4%) did not know.

There were 296 patients (12.4% of 2,392 respondents) who had close contact with an infant aged < 6 months. Of these, 179 (61.3%) had been vaccinated in the previous decade for pertussis. Relationship with the infant was specified for 285 respondents: 85 (29.8%) were grandparents, 69 (24.2%) a parent/guardian, 33 (11.6%) siblings, 20 (7.0%) child care workers, nine (3.2%) health workers, and 72 (25.3%) had an other relationship with the infant. Of the 85 grandparents, 83 provided pertussis vaccination status. Approximately half (51.8%) of these were known to be vaccinated. Of the 69 parents, 72.5% had received pertussis vaccination, and of the 33 siblings, 32 (97.0%) were vaccinated.

There were 2,393 respondents to the pertussis diagnosis question. None of the respondents had been diagnosed with pertussis in the previous year. However, 65 (2.7%) did not know whether they had been diagnosed with pertussis.

Of 2,334 respondents, 107 patients (4.6%) had had a persistent cough in the previous 12 months. Of 2,105 respondents, 98.8% had not had time off work or study because the patient or someone in their care had pertussis or persistent cough.

The following pages contain the recording form and instructions with which the data in this abstract were collected.

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **PERTUSSIS (WHOOPING COUGH) AND PERSISTENT COUGH.**

You may tear out this page as a guide to completing the following section of forms.

INSTRUCTIONS

Please answer the following questions for **ALL** of the **next 30 PATIENTS in the order in which the patients are seen.**

Please **DO NOT select patients** to suit the topic being investigated.

Vaccination status

Please use the tick boxes to indicate whether this patient has been **vaccinated** for **pertussis** (i.e. whooping cough), **diphtheria or tetanus** in the **past 10 years**.

Contact with infants aged <6 months

Please advise whether this patient is in **close contact** with any **infant(s) aged <6 months**.

If '**yes**' please use the tick boxes to indicate the **relationship** this patient has **with the infant**.

Pertussis

Please use the tick boxes to indicate whether this patient has been **diagnosed with pertussis** (i.e. whooping cough) in the **past 12 months**.

Persistent cough

For patients who have not been diagnosed with pertussis please indicate whether they have had a **discrete episode of coughing lasting more than 3 weeks** in the **past 12 months**.

Please **exclude coughs with a known cause** (e.g. asthma, smoking).

Management of pertussis

For patients who were diagnosed with pertussis please indicate how they were treated (either with or without clinician involvement).

Medication(s): please specify the **name, form** and regimen (**dose and frequency**) for **any medication taken**.

Hospital admission: please tick the box if the patient was hospitalised due to pertussis

Other treatment(s): in the space provided please specify any other treatment used to manage pertussis (e.g. procedures)

If the patient's pertussis was **not treated** please tick the box labelled '**NO treatment**'.

Time off work/study

Please use the tick boxes to indicate whether this patient had to take **time off work or study** (i.e. school or university) in the **past 12 months** because **they** or **someone in their care** had **pertussis,** or a **cough** lasting >3 weeks.

Has the patient been vaccinated in past 10 years for:

	Yes	No	Don't know
Pertussis (Whooping cough)	☐	☐	☐
Diphtheria	☐	☐	☐
Tetanus	☐	☐	☐

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Is the patient in close contact with infant(s) aged <6 mths? *(E.g. household member, carer, health worker)*

☐ Yes
☐ No

What is the patient's relationship with the infant(s)?

☐ Parent/guardian
☐ Sibling
☐ Grandparent
☐ Childcare worker
☐ Health worker
☐ Other: _____

Has the patient been diagnosed with pertussis in the past 12 mths?

☐ Yes
☐ No
☐ Don't know

If 'no' or 'don't know', has the patient had a discrete episode of coughing lasting >3 weeks in past 12 mths? *(Please exclude coughs with a known cause e.g. smoking, asthma)*

☐ Yes ☐ Don't know
☐ No

If the patient had pertussis, how was it treated?

Medication:

Name & Form	Strength	Dose	Freq

☐ Hospital admission
☐ Other treatments: _____ *(please specify)*
☐ **NO treatment**

In past 12 mths was the patient absent from work/study because they or a person in their care had pertussis, or cough lasting >3wks?

☐ <1 wk
☐ 1-2 wks
☐ >2 wks
☐ No time off

SAND abstract number 176: Comorbidity and management of gout in GP patients

Organisation supporting this study: Novartis Pharmaceuticals Australia Pty Ltd

Issues: The proportion of general practice patients ever treated for gout; current morbidities; number of gout episodes experienced in the previous 12 months; care sought by patients for gout; managements used for gout; contraindications in gout management.

Sample: 3,094 patients from 105 GPs; data collection period: 30/11/2010 – 17/01/2011

Method: Detailed in the paper entitled *SAND method 2010–11* at: <www.fmrc.org.au/publications/SAND_abstracts.htm>.

Summary of results

The age and sex distribution of the 3,094 respondents did not differ from that of patients at all 2009–10 BEACH encounters, with the majority (58.6%) being female.

Of the 3,094 respondents, 175 (5.7%, 95% CI: 4.5–6.8) had been treated for gout. After adjustment for attendance rates by age and sex of patient, we estimated that 4.1% of patients who attended the GP once that year had at some time been treated for gout. Treatment was most common for older patients, 11.8% of those aged 65–74 years and 11.3% of those aged 75+ years. The sex-specific rate of gout treatment among male patients (9.8%, 95% CI: 7.9–11.6) was significantly higher than among females (2.7%, 95% CI: 1.7–3.6). Of 175 patients treated for gout, 64.6% had hypertension, 67 (38.3%) had elevated total cholesterol or triglycerides, 66 (37.7%) were obese, 65 (37.1%) had osteoarthritis, 41 (23.4%) used a diuretic, and 39 (22.3%) had chronic kidney disease.

Of 169 respondents (of 175 who had been treated for gout), 69 (40.8%, 95% CI: 34.3–47.4) had an episode of gout in the previous 12 months: 33 patients had one episode and 20 patients had two. Of 160 respondents (multiple responses allowed), 64 (53.3%) used a health service in the past 12 months for gout management: 62 (38.8%) visited a GP, three (1.9%) visited a specialist, three (1.9%) required a hospital visit and three (1.9%) visited an emergency department – 96 patients (60.0%) had not used a health service for management in the previous 12 months.

Of the 68 patients who had had at least one episode of gout in the past 12 months, 55 (80.9%) had used a health service: 53 (77.9%) had visited a GP to have their gout managed, three (4.4%) had visited a specialist, three (4.4%) had required a hospital visit and one patient visited an emergency department for their gout. There were 13 patients (19.1%) who had had an episode of gout in the previous 12 months but had not used a health service.

Of the 175 patients at some time treated for gout, management information was available for 149. Of these, 131 (87.9%) had received treatment for their most recent episode, and 18 patients (12.1%) had sought no treatment. Of those treated, 120 (80.5%) had used medication to treat their most recent episode, and 145 medications were recorded. Colchicine accounted for 37.2% and allopurinol for 22.1% of medications. The most common other treatment used for gout was lifestyle modification (51.0%).

Suitability of specified medications for gout was recorded for 159 patients, while responses varied for each medication. Contraindication or intolerance was indicated for: allopurinol (4.8%); colchicine (8.3%); oral or systemic corticosteroids (11.5%); and NSAIDS (37.4%).

The following pages contain the recording form and instructions with which the data in this abstract were collected.

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **MANAGEMENT OF GOUT.**

You may tear out this page as a guide to completing the following section of forms.

INSTRUCTIONS

Please answer the following questions for **ALL** of the **next 30 PATIENTS in the order in which the patients are seen.**

Please **DO NOT select patients** to suit the topic being investigated.

Gout

Please indicate whether this patient has ever been **treated for gout** by you or any health professional.

If '**no**' please **end questions here** for this patient.

Acute episodes

Please ask the patient approximately **how many acute episodes** of gout they have experienced in the **past 12 months**.

Treatment of gout

Please indicate how the most **recent episode** of gout was **managed:**

Medication

Please write the **name, form** and regimen (**dose and frequency**) of the **medication(s)** used to treat gout.

Other treatment

Use the tick boxes to advise whether any **other treatments** were used for management of the most recent gout episode.

No treatment

If **no treatment** was used please tick the box labelled '**no treatment used'**.

Comorbidities

Please use the tick boxes to advise whether the patient has been diagnosed with any of the **listed conditons,** or uses diuretics.

Please tick all that apply

NB. TC = total cholesterol;
TG = triglycerides

Type of care sought

Please use the tick boxes to indicate whether in the **past 12 months** management of gout has involved a **GP visit**, **specialist visit**, **hospital admission**, and/or an **emergency department visit**.

Tick as many as apply.

Unsuitable medications

Please use the tick boxes to advise whether the patient is **unable to take** any of the **specified medications** for the treatment of gout because the medication is **contraindicated**, they are **intolerant** of or **unresponsive** to the medication.

Has this patient ever been treated for gout?

- ☐ Yes
- ☐ No→ **End questions**

BL128B

Does the patient have:

- ☐ Chronic kidney disease
- ☐ Hypertension
- ☐ Obesity
- ☐ Elevated TC or TGs
- ☐ Osteoarthritis

AND / OR *(tick all that apply)*

- ☐ Diuretic use?

How many acute episodes of gout in the past 12 months?

(please specify) _____

- ☐ None
- ☐ Don't know

In the past 12 mths has gout required:

- ☐ GP visit
- ☐ Specialist visit
- ☐ Hospital admission
- ☐ Emergency Dept visit
- ☐ None of the above

How was the most recent episode managed? ☐ No treatment used

Medication:

Name & Form	Strength	Dose	Frequency

Other treatment:

- ☐ Lifestyle modification
- ☐ Referral to specialist
- ☐ Referral to allied health professional
- ☐ Other: _____

Are any of the medications below unsuitable for use by this patient?

	Contraindicated/ intolerant	Unresponsive	No
Allopurinol	☐	☐	☐
NSAID	☐	☐	☐
Colchicine	☐	☐	☐
Oral corticosteroid	☐	☐	☐
Corticosteroid inject'n	☐	☐	☐

SAND abstract number 177: Multiple morbidity and chronic heart failure

Organisation supporting this study: CSL Ltd

Issues: In patients attending general practice, prevalence of: selected chronic conditions and pattern of multiple morbidity; other chronic conditions and pattern of multiple morbidity. For patients with chronic heart failure (CHF): patterns of comorbidities; stage of CHF; other health professionals involved in management of CHF; proportion currently taking medication for CHF; types and prescribed dosage of these medications; whether a beta-blocker is used in CHF management.

Sample: 2,952 patients from 104 GPs; data collection period: 30/11/2010 – 17/01/2011

Method: Detailed in the paper entitled *SAND method 2010–11* at: <www.fmrc.org.au/publications/SAND_abstracts.htm>. **Method for this study:** Stages of heart failure were defined according to the Heart Failure Society of America. A card defining the stages of heart failure was provided to assist with the completion of the form.

Summary of results

Sex distribution of patients was no different from the total BEACH sample in 2009–10. However, there was a significantly smaller proportion of patients aged < 1 year (1.2%, 95% CI: 0.8–1.6) and 1–4 years (3.1%, 95% CI: 2.2–4.0) compared with the total sample (2.1% aged < 1 year, 95% CI: 1.9–2.3, and 4.7% aged 1–4 years, 95% CI: 4.5–5.0).

Of 2,952 patients, 1,361 (46.1%, 95% CI: 41.7–50.5) had at least one of the ten listed conditions. Hypertension was most prevalent (n = 901; 30.5%), followed by chronic arthritic pain (12.6%), diabetes (10.8%), chronic back pain (10.3%), chronic obstructive pulmonary disease (5.1%), CHF (4.3%), benign prostatic hypertrophy (2.7%), dementia/Alzheimer's (2.3%), psoriasis (1.3%) and chronic cancer pain (1.1%). One–quarter (24.0%; n = 707) had one of the listed conditions, 13.4% had two and 8.8% had three or more conditions. There were 1,519 additional chronic conditions recorded for 804 patients. Circulatory problems accounted for 19.2% and endocrine/metabolic problems for 18.6%.

Of the 127 CHF patients, over two-thirds (67.7%) were aged 75 years and over and the sex distribution did not differ from all patients in this sample. Of 120 respondents for staged CHF, almost half (47.5%) had Mild Stage II CHF, 28.3% had Mild Stage I, and 20.0% had Moderate Stage III CHF. Three patients had Severe Stage IV CHF and for two patients, stage of CHF was not known. None of the listed morbidities were present in 11.8% of CHF patients; 26.8% had one listed comorbidity, 29.1% had two and 32.3% had three or more listed comorbidities. The most common combinations of comorbidities were: CHF and hypertension (11.8%); CHF and hypertension and diabetes (7.9%); and CHF and hypertension and chronic arthritic pain (6.3%).

Details on current referrals for CHF were available for 101 of the 127 patients with CHF. Multiple responses were allowed. Referrals to cardiologists were recorded for 87.1% of patients, referrals to general physicians for 12.9% and referrals to geriatricians for 8.9%.

Of 123 CHF patients with medication details, 118 were currently taking medication for their CHF. A total of 315 medications were recorded, with beta-blocking agents being most common (n = 74; 23.5%). There were 49 patients who were not taking a beta-blocker, the main reason being advanced age (> 70 years), given for 57.1% of these patients.

The following pages contain the recording form and instructions with which the data in this abstract were collected.

The Stages of Heart Failure

Class	Patient Symptoms
Class I (Mild)	No limitation of physical activity. Ordinary physical activity does not cause undue fatigue, palpitation, or dyspnoea (shortness of breath).
Class II (Mild)	Slight limitation of physical activity. Comfortable at rest, but ordinary physical activity results in fatigue, palpitation, or dyspnoea.
Class III (Moderate)	Marked limitation of physical activity. Comfortable at rest, but less than ordinary activity causes fatigue, palpitation, or dyspnoea.
Class IV (Severe)	Unable to carry out any physical activity without discomfort. Symptoms of cardiac insufficiency at rest. If any physical activity is undertaken, discomfort is increased.

Source: Heart Failure Society of America. New York Heart Association (NYHA) functional classification system. 2002 [cited 2010 Oct 10]. Available from http://www.abouthf.org/questions_stages.htm

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **MULTIPLE MORBIDITY AND CHRONIC HEART FAILURE.**

You may tear out this page as a guide to completing the following section of forms.

INSTRUCTIONS

Please answer the following questions for **ALL** of the **next 30 PATIENTS in the order in which the patients are seen.**

Please **DO NOT select patients** to suit the topic being investigated.

Prevalence of selected conditions

Please use the tick boxes to indicate whether the patient has been **diagnosed with any of the listed conditions**. Please tick as many as apply.

If the patient has **none of the listed conditions** please tick the box labelled 'none of the above' and **end questions here for this patient**.

Chronic heart failure

The **remaining questions on this SAND form are for patients with chronic heart failure (CHF)**. If the patient does not have CHF you may **end questions here**.

Stage of chronic heart failure

Referring to the **New York Heart Association functional classification system** (**see definition on card**) please indicate the patient's **stage of CHF**.

Other chronic conditions

If the patient suffers from **any other chronic conditions** please write the conditions in the space provided.

Referrals for CHF

Please use the tick boxes to indicate the **current referral(s)** this patient has for the management of their CHF.

Please tick all that apply.

Current CHF medications

Please write the **name** and **form** of the **current medication(s)** taken by the patient for management of **CHF**.

Please indicate the regimen (i.e. **strength, dose and frequency**) of the medication(s).

If the patient is **not currently taking a medication** for CHF please tick the box labelled '**No CHF medication**'.

Beta-blocker use

For patients who **do not currently use a beta-blocker** please indicate the **reason(s)** that a beta-blocker is not used.

Please tick all that apply.

Has the patient been diagnosed with:

- ☐ Chronic heart failure (CHF)
- ☐ Benign prostatic hyperplasia
- ☐ Psoriasis
- ☐ Diabetes
- ☐ Hypertension
- ☐ COPD
- ☐ Dementia/ Alzheimer's
- ☐ Chronic arthritic pain
- ☐ Chronic back pain
- ☐ Chronic cancer pain
- ☐ None of the above

BL128C **End questions**

Other chronic conditions for this patient:

1. _____
2. _____
3. _____
4. _____
5. _____

Remaining Qs are for patients with CHF

If no CHF → **End Qs**

Stage of CHF is: *(See definition on card)*

- ☐ Mild I
- ☐ Mild II
- ☐ Moderate III
- ☐ Severe IV
- ☐ Don't know

Current referral/s for CHF are:

- ☐ Cardiologist
- ☐ Geriatrician
- ☐ General physician
- ☐ Other: _____

Current medication(s) for CHF:

Name & Form	Strength	Dose	Frequency

☐ **No CHF medication**

If beta-blocker is not taken, why not?

- ☐ Advanced age (>70 yrs)
- ☐ COPD
- ☐ Diabetes
- ☐ Hypotension
- ☐ Renal impairment
- ☐ Liver impairment
- ☐ Peripheral vasc. disease
- ☐ 2° or 3° AV block
- ☐ Bradycardia
- ☐ Other: _____

SAND abstract number 178: Warfarin use in general practice patients

Organisation supporting this study: Bayer Australia Ltd

Issues: The prevalence of current or history of atrial fibrillation (AF/past AF), deep vein thrombosis (DVT/past DVT), pulmonary embolism (PE/past PE) and heart valve disease (HVD/past HVD) in general practice patients; proportion of these patients taking warfarin; duration of warfarin use; proportion not taking warfarin; reasons warfarin is not used. For AF/past AF patients who take warfarin: frequency of INR testing; which health professional orders the INR test; use of health resources for each episode of INR monitoring; number of INR results available from the past 6 months; proportion of INR results that reflect uncontrolled INR (outside 2.0–3.0 range).

Sample: 3,075 patients from 106 GPs; data collection period: 18/01/2011 – 21/02/2011

Method: Detailed in the paper entitled *SAND method 2010–11* at: <www.fmrc.org.au/publications/SAND_abstracts.htm>.

Summary of results

The age distribution of patients did not differ from that of the annual BEACH sample but there was a significantly smaller proportion of male patients (38.7%, 95% CI: 35.6–41.8) in this sample than in total 2009–10 BEACH encounters (43.1%, 95% CI: 42.3–43.9).

Among the 3,075 respondents, 92.3% had none of the listed conditions and 237 (7.7%) had/had a history of at least one. Multiple listed conditions were allowed for each patient. There were 138 (4.5%) AF/past AF patients, 39 (1.3%) DVT/past DVT patients, 29 (0.9%) PE/past PE patients and 65 (2.1%) HVD/past HVD patients.

AF was rare in patients aged less than 45 years. Rates rose significantly through the age groups with 63.5% of AF/past AF patients being 75 years and older (95% CI: 53.9–73.1). AF was more prevalent in males (6.9%, 95% CI: 5.2–8.6) than in females (3.1%, 95% CI: 2.2–3.9).

Of 236 respondents with at least one of the listed conditions, more than half (54.7%) were currently taking warfarin, 47 (19.9%) had previously taken it and 60 (25.4%) had never taken it. Of 43 patients where duration of warfarin use was known, the average was 9.5 months. Of 107 patients not currently taking warfarin, 'warfarin not required' was the reason for 65.9%, 'high bleeding risk' for 15.4%, and 'patient refusal' for 3.3%.

Of 118 AF/past AF respondents, 67 (56.8%) were currently taking warfarin. Of 61 for whom duration was known, 53 (86.9%) had taken warfarin for longer than 12 months. Of 64 who gave frequency of INR monitoring, every four weeks was the usual (40.6%), followed by every two weeks (29.7%). Of 62 who indicated the health professional who ordered INR monitoring tests, 90.3% were ordered by a GP, 8.1% by a specialist and 1.6% by an other practitioner. Of 67 who provided details on use of health resources for each episode of INR monitoring, the most common combination of events was face-to-face contact and point of care INR testing (n = 19; 28.4%) followed by phone calls and laboratory INR testing (n = 14; 20.9%). Of 67 for whom number of INR results in the past six months was known, there were an average of 9.7 results. Of respondents to the INR stability questions, 15 (23.4%) had no results < 2.0 and 18 (30%) had no results > 3.0 in the past 6 months. Of 58 patients with results outside the 2–3 range, 27 (46.6%) had 25–50% of their results reflecting uncontrolled INR, 22 of these patients indicated that duration of warfarin use was longer than 12 months.

The following pages contain the recording form and instructions with which the data in this abstract were collected.

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **PATIENT USE OF WARFARIN.**

You may tear out this page as a guide to completing the following section of forms.

INSTRUCTIONS

Please answer the following questions for **ALL** of the **next 30 PATIENTS in the order in which the patients are seen.**

Please **DO NOT select patients** to suit the topic being investigated.

Patient conditions

Please use the tick boxes to advise whether the patient **currently has**, or has a **history of, any of the listed conditions**.

Tick as many as apply.

If the patient has **not** had any of the listed conditions, you may **end questions here** for this patient.

Warfarin use

Please advise whether this patient has **ever taken warfarin**.

If '**yes**' please indicate whether **warfarin is currently used**, **or** was **taken previously**. If it was **used previously**, please indicate the **length of time** (in months) **that the patient took warfarin**. If past warfarin use has been episodic please specify the duration of the most recent episode of warfarin use.

Patients not taking warfarin

If the patient is not currently taking warfarin please use the tick boxes to indicate **why warfarin is not used**. If the reason is not listed please specify the reason in the space provided.

Tick all that apply.

Duration of current warfarin use

For patients currently taking warfarin, please use the tick boxes to indicate **how long** this patient has been **taking warfarin**.

If the patient is **not** currently using warfarin please **end questions here** for this patient.

Monitoring of warfarin

Please specify **how often** this patient's **INR is monitored**. For example, for patients who have their INR tested every month please write:

4 days / (weeks)

Please use the tick boxes to indicate **who orders the INR monitoring** tests.

For **each monitoring episode** (i.e. the INR test, communicating results and dosage advice) approximately **how many contacts** (i.e. face-to-face visits, phone calls) and **INR tests** (either lab-based or point of care tests) **are required.**

Note: PoCT refers to point of care INR testing.

INR stability

Please specify approximately **how many** of this patient's **INR results** were available in the **past 6 months**. Of these, please specify how many were **less than 2.0**, and how many were **more than 3.0**.

If the answer to any question is '**none**' please write '**0**' in the space provided.

Does the patient have (or have a history of) any of the following:

- ☐ Atrial fibrillation
- ☐ Deep vein thrombosis (DVT)
- ☐ Pulmonary embolism (PE)
- ☐ Heart valve disease
- ☐ None of the above

End questions

BL129C

Has this patient ever taken warfarin?

- ☐ Yes - currently
- ☐ Yes - previously, for a duration of: ____ mths
- ☐ No - never

If NO current use of warfarin, why not?

- ☐ Patient refusal
- ☐ High bleeding risk
- ☐ Not required
- ☐ Other reason(s): _____ *(please specify)*

Current warfarin use:

If **not** currently using warfarin → **End Qs**

How long has warfarin been taken?

- ☐ <3 mths
- ☐ 3-6 mths
- ☐ 7-12 mths
- ☐ >12 mths
- ☐ Don't know

INR monitoring is usually done every:

_____ days / weeks *(Please circle)*

Ordered by?

- ☐ GP
- ☐ Specialist
- ☐ Other

Each monitoring episode (including giving results) involves approx. how many:

- Face-to-face consults _____
- Phone calls _____
- INR tests (at lab) ____
- INR tests (PoCT) ____

In the past 6 months, approx. how many INR results were available: _____ *(please specify)*

Of these INR results, how many were...

- less than 2.0: _____
- more than 3.0: _____

SAND abstract number 179: Pneumococcal vaccination and pneumonia in older Australian general practice patients

Organisation supporting this study: Pfizer Australia Pty Ltd

Issues: For patients aged 50 years and over: proportion of patients who received pneumococcal vaccine in the previous 5 years; proportion who received a booster vaccine; main reasons for providing pneumococcal vaccine. Proportion of patients diagnosed with pneumonia in the previous 12 months; vaccination status of those diagnosed; impact of pneumonia on daily life.

Sample: This SAND was limited to patients aged 50 years and over. There was a total sample of 1,618 patients aged 50 years and over from 102 GPs; data collection period: 22/02/2011 – 28/03/2011.

Method: Detailed in the paper entitled *SAND method 2010–11* at: <www.fmrc.org.au/publications/SAND_abstracts.htm>.

Summary of results

The SAND questions were divided into two parts: part 1 – pneumococcal vaccine and part 2 – pneumonia. Of 1,618 patients aged 50 years and over in the sample, 1,565 (96.7%) responded to the question on pneumococcal vaccination and 1,513 (93.5%) responded to the question on whether they had been diagnosed with pneumonia in the previous 12 months. The sex distribution of patients in the sample was not significantly different from that of all 2009–10 BEACH encounters, with females accounting for 58.7% (95% CI: 55.0–62.4).

Of 1,565 respondents, 682 (43.6%) received a pneumococcal vaccine in the previous 5 years. Of these, 636 patients (93.3%) had received Pneumovax 23, 12 (1.8%) received an other pneumococcal vaccine and 35 (5.1%) did not know what vaccine was given. Of 651 vaccinated respondents, the pneumococcal vaccination was the first adult vaccine for 42.2% (n = 275), while for 57.8% (n = 376) it was an adult booster vaccination.

The main reasons for receiving pneumococcal vaccination were provided for 624 of the 682 vaccinated patients. Multiple responses were allowed. For 525 patients (84.1%) the main reason was being aged 65 years and over. The presence of conditions predisposing the patient to pneumococcal infection was the reason for 107 (17.2%) and 155 predisposing conditions were recorded. Type 2 diabetes was present in 32.7% of these 107 patients, chronic obstructive pulmonary disease for 19.6%, asthma for 14.0% and non-specified risk factor for 7.5%. For 32 patients (5.1%) being a smoker was a reason for vaccination, while being an Indigenous person aged 50 years and over was a reason for 11 (1.8%) patients.

Of the 1,618 patients aged 50 years and over, 1,513 (93.5%) indicated whether they had been diagnosed with pneumonia in the previous 12 months, 37 (2.5%) of these had been. Of 32 patients who indicated whether they had received a pneumococcal vaccine prior to being diagnosed, 22 (68.8%) had been vaccinated before being diagnosed with pneumonia.

Of 37 patients diagnosed with pneumonia, 33 responded to the question about its impact. Of the 33 respondents, 16 (48.5%) said that pneumonia had impacted moderately on their daily lives, 11 (33.3%) said it impacted severely and 3 (9.1%) said it impacted very severely. Among the 22 patients who had been vaccinated before being diagnosed, 11 (50%) said impact of pneumonia on their daily lives was moderate and for 7 (31.8%) it was severe.

The following pages contain the recording form and instructions with which the data in this abstract were collected.

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **PNEUMOCOCCAL VACCINATION AND PNEUMONIA.**

You may tear out this page as a guide to completing the following section of forms.

INSTRUCTIONS

For the **next 30 PATIENTS**, ask all who are **aged 50 years and over** the following questions. If the patient is aged less than 50 years please leave the questions blank.

Please **DO NOT select patients** to suit the topic being investigated.

Pneumococcal immunisation

Please use the tick boxes to advise whether this patient has had a **pneumococcal immunisation** in the **last 5 years**.

If '**no**' please continue to **part 2** of the form.

Stage of vaccination

Please indicate whether the **pneumococcal vaccine** given to the patient was the first adult vaccine dose received.

Main reason(s) for vaccination

In your clinical opinion, please advise the **main reason(s)** that this patient **received the pneumococcal vaccine**.

Please tick all that apply.

PART 2: Pneumonia

Please ask the patient whether they have been **diagnosed with pneumonia in the last 12 months**.

If '**yes**' please specify the date (**month and year**) that the **pneumonia was diagnosed**.

If '**no**' please **end questions** here for this patient.

Immune status

Please indicate whether the patient was **vaccinated** with a **pneumococcal vaccine before** being diagnosed with **pneumonia**.

Impact of pneumonia

Please ask the patient to describe the extent to which pneumonia **impacted on their day to day life**.

For patients aged 50+ years: Has a pneumococcal vaccine been given in the past 5 years?	If 'yes', was this the first adult pneumococcal vaccine the patient received?	In your clinical opinion, what was/were the main reason/s for receiving the vaccine?	PART 2: Pneumonia	Did the patient receive a pneumococcal vaccine before being diagnosed with pneumonia?	To what extent did pneumonia impact on the patient's day to day life?
☐ Yes - Pneumovax 23 ☐ Yes - other: *(please specify)* _____ ☐ Yes - unknown ☐ No → **Go to PART 2** BL130B	☐ Yes (first adult vaccine) ☐ No (adult booster)	☐ Aged ≥ 65 years ☐ Aboriginal/Torres Strait Islander ≥ 50 years ☐ Conditions predisposing the patient to pneumococcal infection: _____ *(please specify)* ☐ Smoker ☐ Other: *(please specify)* _____	Has the patient been diagnosed with pneumonia in the past 12 months? ☐ Yes ☐ No → **End questions**	☐ Yes ☐ No ☐ Don't know	☐ Not at all ☐ Slightly ☐ Moderately ☐ Severely ☐ Very severely

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Abbreviations

ABS	Australian Bureau of Statistics
ACE	angiotensin-converting enzyme
ACRRM	Australian College of Rural and Remote Medicine
AHS	allied health service
AIHW	Australian Institute of Health and Welfare
ASGC	Australian Standard Geographical Classification
ATC	Anatomical Therapeutic Chemical (classification)
BEACH	Bettering the Evaluation and Care of Health
BMI	body mass index
BP	blood pressure
CAPS	Coding Atlas for Pharmaceutical Substances
CI	confidence interval (in this report 95% CI is used)
CT	computerised tomography
DoHA	Australian Government Department of Health and Ageing
DVA	Australian Government Department of Veterans' Affairs
FACRRM	Fellow of the Australian College of Rural and Remote Medicine
FMRC	Family Medicine Research Centre
FRACGP	Fellow of the Royal Australian College of General Practitioners
FTE	full-time equivalent
GP	general practitioner
HbA1c	haemoglobin, type A1c
HIV	human immunodeficiency virus
ICPC	International Classification of Primary Care
ICPC-2	International Classification of Primary Care – Version 2
ICPC-2 PLUS	a terminology classified according to ICPC-2
INR	international normalised ratio
LCL	lower confidence limit
MBS	Medicare Benefits Schedule
M,C&S	microscopy, culture and sensitivity
NDSHS	National Drug Strategy Household Survey
NESB	non-English-speaking background
NHMRC	National Health and Medical Research Council
NHS	National Health Survey

OTC	over-the-counter (medications advised for over-the-counter purchase)
PBS	Pharmaceutical Benefits Scheme
RACGP	Royal Australian College of General Practitioners
RFE	reason for encounter
RRMA	Rural, Remote and Metropolitan Area classification
SAND	Supplementary Analysis of Nominated Data
SAS	Statistical Analysis System
UCL	upper confidence limit
URTI	upper respiratory tract infection
WHO	World Health Organization
Wonca	World Organization of Family Doctors

Symbols

–	not applicable
<	less than
>	more than
NEC	not elsewhere classified
n	number
NOS	not otherwise specified

Glossary

A1 Medicare items: Medicare item numbers 1, 2, 3, 4, 13, 19, 20, 23, 24, 25, 33, 35, 36, 37, 38, 40, 43, 44, 47, 48, 50, 51, 601, 602.

Aboriginal: The patient identifies himself or herself as an Aboriginal person.

Activity level: The number of general practice A1 Medicare items claimed during the previous 3 months by a participating GP.

Allied and other health professionals: Those who provide clinical and other specialised services in the management of patients, including physiotherapists, occupational therapists, dietitians, dentists and pharmacists.

Chapters (ICPC-2): The main divisions within ICPC-2. There are 17 chapters primarily representing the body systems.

Chronic problem: see *Diagnosis/problem: Chronic problem*.

Commonwealth concession card: An entitlement card provided by the Australian Government, which entitles the holder to reduced-cost medicines under the Pharmaceutical Benefits Scheme and some other concessions from state and local government authorities.

Complaint: A symptom or disorder expressed by the patient when seeking care.

Component (ICPC-2): In ICPC-2 there are seven components that act as a second axis across all chapters.

Consultation: See *Encounter*.

Diagnosis/problem: A statement of the provider's understanding of a health problem presented by a patient, family or community. GPs are instructed to record at the most specific level possible from the information available at the time. It may be limited to the level of symptoms.

- *New problem:* The first presentation of a problem, including the first presentation of a recurrence of a previously resolved problem, but excluding the presentation of a problem first assessed by another provider.
- *Old problem:* A previously assessed problem that requires ongoing care, including follow-up for a problem or an initial presentation of a problem previously assessed by another provider.
- *Chronic problem:* A medical condition characterised by a combination of the following characteristics: duration that has lasted or is expected to last 6 months or more, a pattern of recurrence or deterioration, a poor prognosis, and consequences or sequelae that impact on an individual's quality of life. (*Source:* O'Halloran J, Miller GC, Britt H 2004. Defining chronic conditions for primary care with ICPC-2. Fam Pract 21(4):381–6).
- *Work-related problem:* Irrespective of the source of payment for the encounter, it is likely in the GP's view that the problem has resulted from work-related activity or workplace exposure, or that a pre-existing condition has been significantly exacerbated by work activity or workplace exposure.

Encounter (enc): Any professional interchange between a patient and a GP.

- *Indirect:* Encounter where there is no face-to-face meeting between the patient and the GP but a service is provided (for example, prescription, referral).
- *Direct:* Encounter where there is a face-to-face meeting of the patient and the GP.

  Direct encounters can be further divided into:

  - Medicare-claimable
    - *Surgery consultations:* encounters identified by any one of MBS item numbers 3, 23, 36, 44, 52, 53, 54, 57, 5000, 5020, 5040, 5060, 5200, 5203, 5207, 5208.
    - *Home or institution visits (excluding residential aged care facilities):* encounters identified by any one of MBS item numbers 4, 19, 24, 33, 37, 40, 47, 50, 58, 59, 60, 65, 87, 89, 90, 91, 003, 5023, 5043, 5063, 5220, 5223, 5227, 5228.
    - *Residential aged care facility:* encounters identified by any one of MBS item numbers 20, 35, 43, 51, 92, 93, 95, 96, 5010, 5028, 5049, 5067, 5260, 5263, 5265, 5267.
    - *Health assessments:* encounters identified by any one of MBS item numbers 700, 702, 704, 706, 708, 709, 710, 712, 713, 714, 717, 718.
    - *Chronic disease management items:* encounters identified by any one of MBS item numbers 720, 721, 722, 723, 724, 725, 726, 727, 729, 730, 731.
    - *Case conferences*: encounters identified by any one of MBS item numbers 734, 736, 738, 740, 742, 744, 762, 765, 773, 775, 778.
    - *Attendances associated with practice incentive payments:* encounters identified by any one of MBS item numbers 2497, 2501, 2503, 2504, 2506, 2507, 2509, 2517, 2518, 2521, 2522, 2525, 2526, 2546, 2547, 2552, 2553, 2558, 2559, 2574, 2575, 2577, 2598, 2600, 2603, 2606, 2610, 2613, 2616, 2620, 2622, 2624, 2631, 2633, 2635, 2664, 2666, 2668, 2673, 2675, 2677, 2704, 2705.
    - *Other MBS encounters:* encounters identified by an MBS item number that does not identify place of encounter (see *A1 Medicare items*).
  - *Workers compensation:* Encounters paid by workers compensation insurance.
  - *Other paid:* Encounters paid from another source (for example, state).

General practitioner (GP): A medical practitioner who provides primary comprehensive and continuing care to patients and their families within the community (Royal Australian College of General Practitioners).

GP consultation service items: Includes GP services provided under the MBS professional services category including MBS items classed as A1, A2, A5, A6, A7, A14, A17, A18, A19, A20, A22 and selected items provided by GPs classified in A11, A15 and A27.

Medication: Medication that is prescribed, provided by the GP at the encounter or advised for over-the-counter purchase.

Medication rates: The rate of use of all medications, including medications that were prescribed, supplied by the GP and advised for over-the-counter purchase.

Medication status:

- *New:* The medication prescribed/provided at the encounter/advised is being used for the management of the problem for the first time.
- *Continuation:* The medication prescribed/provided at the encounter/advised is a continuation or repeat of previous therapy for this problem.

- *Old:* See *Continuation*.

Morbidity: Any departure, subjective or objective, from a state of physiological wellbeing. In this sense, sickness, illness and morbid conditions are synonymous.

Patient status: The status of the patient to the practice.

- *New patient*: The patient has not been seen before in the practice.
- *Old patient:* The patient has attended the practice before.

Practice nurse involvement: Encounters at which a practice nurse MBS item number and/or a treatment (either clinical or procedural) was recorded as done by a practice nurse.

Prescribed rates: The rate of use of prescribed medications (that is, does not include medications that were GP-supplied or advised for over-the-counter purchase).

Problem managed: See *Diagnosis/problem*.

Provider: A person to whom a patient has access when contacting the health care system.

Reasons for encounter (RFEs): The subjective reasons given by the patient for seeing or contacting the general practitioner. These can be expressed in terms of symptoms, diagnoses or the need for a service.

Recognised GP: A medical practitioner who is:

- vocationally recognised under Section 3F of the *Health Insurance Act*, *or*
- a holder of the Fellowship of the Royal Australian College of General Practitioners who participates in, and meets the requirements for, quality assurance and continuing medical education as defined in the Royal Australian College of General Practitioners (RACGP) Quality Assurance and Continuing Medical Education Program, *or*
- undertaking an approved placement in general practice as part of a training program for general practice leading to the award of the Fellowship of the Royal Australian College of General Practitioners, or undertaking an approved placement in general practice as part of some other training program recognised by the RACGP as being of equivalent standard. (*Source:* Commonwealth Department of Health and Aged Care 2001. Medicare benefits schedule book. Canberra: DHAC).

Referral: The process by which the responsibility for part or all of the care of a patient is temporarily transferred to another health care provider. Only new referrals to specialists and allied health services, and for hospital and residential aged care facility admissions arising at a recorded encounter are included. Continuation referrals are not included. Multiple referrals can be recorded at any one encounter.

Repatriation health card: An entitlement card provided by the Department of Veterans' Affairs that entitles the holder to access a range of Repatriation health care benefits, including access to prescription and other medications under the Pharmaceutical Benefits Scheme.

Rubric: The title of an individual code in ICPC-2.

Significant: This term is used to refer to a statistically significant result. Statistical significance is measured at the 95% confidence level in this report.

Torres Strait Islander: The patient identifies himself or herself as a Torres Strait Islander person.

Work-related problem: See *Diagnosis/problem*.

Appendices

Appendix 1: Example of a 2010–11 recording form

BEACH (Bettering the Evaluation And Care of Health) - Morbidity and Treatment Survey - National © BEACH The University of Sydney 1996 DOC ID

Encounter Number

Date of encounter	Date of Birth	Sex	Patient Postcode
___/___/___	___/___/_ _ _ _	M ☐ F ☐	

	Yes	No
New Patient	☐	☐
Health Care/Benefits Card	☐	☐
Veterans Affairs Card	☐	☐
NESB	☐	☐
Aboriginal	☐	☐
Torres Strait Islander	☐	☐

PATIENT SEEN BY GP ☐
PATIENT NOT SEEN BY GP ☐

Medicare Item Nos: (if applicable)
1. _____
2. _____
3. _____

Workers comp paid ☐
State Govt/Other paid ☐
No charge ☐

START Time : AM / PM (please circle)

Patient Reasons for Encounter
1.
2.
3.

Diagnosis/ Problem ① : **Problem Status** New ☐ Old ☐ Work related ☐

Drug Name AND Form for this problem	Strength of product	Dose	Frequency	No. of Rpts	OTC	GP Supply	Drug status New	Drug status Cont.
1.								
2.								
3.								
4.								

Procedures, other treatments, counselling this consult for this problem
1. Prac Nurse? ☐ 2. Prac Nurse? ☐

Diagnosis/ Problem ② : **Problem Status** New ☐ Old ☐ Work related ☐

Drug Name AND Form for this problem	Strength of product	Dose	Frequency	No. of Rpts	OTC	GP Supply	Drug status New	Drug status Cont.
1.								
2.								
3.								
4.								

Procedures, other treatments, counselling this consult for this problem
1. Prac Nurse? ☐ 2. Prac Nurse? ☐

Diagnosis/ Problem ③ : **Problem Status** New ☐ Old ☐ Work related ☐

Drug Name AND Form for this problem	Strength of product	Dose	Frequency	No. of Rpts	OTC	GP Supply	Drug status New	Drug status Cont.
1.								
2.								
3.								
4.								

Procedures, other treatments, counselling this consult for this problem
1. Prac Nurse? ☐ 2. Prac Nurse? ☐

Diagnosis/ Problem ④ : **Problem Status** New ☐ Old ☐ Work related ☐

Drug Name AND Form for this problem	Strength of product	Dose	Frequency	No. of Rpts	OTC	GP Supply	Drug status New	Drug status Cont.
1.								
2.								
3.								
4.								

Procedures, other treatments, counselling this consult for this problem
1. Prac Nurse? ☐ 2. Prac Nurse? ☐

NEW REFERRALS, ADMISSIONS Problem(s)
1. _____ 1 2 3 4
2. _____ 1 2 3 4

IMAGING/Other tests Body site - Problem(s)
1. _____ - _____ 1 2 3 4
2. _____ - _____ 1 2 3 4
3. _____ - _____ 1 2 3 4

PATHOLOGY Problem(s)
1. _____ 1 2 3 4
2. _____ 1 2 3 4
3. _____ 1 2 3 4

PATHOLOGY (cont) Problem(s)
4. _____ 1 2 3 4
5. _____ 1 2 3 4

Patient reported
Height: _____ cm
Weight: _____ kg

To the patient if 18+:
Which best describes your smoking status?
- Smoke daily ☐
- Smoke occasionally ☐
- Previous smoker ☐
- Never smoked ☐

To the patient if 18+:
How often do you have a drink containing alcohol?
- Never ☐
- Monthly or less ☐
- Once a week/fortnight ☐
- 2-3 times a week ☐
- 4+ times a week ☐

How many 'standard' drinks do you have on a typical day when you are drinking? _____

How often do you have 6 or more standard drinks on one occasion?
- Never ☐
- Less than monthly ☐
- Monthly ☐
- Weekly ☐
- Daily or almost daily ☐

FINISH Time : AM / PM (please circle)

BA13

Appendix 2: GP characteristics questionnaire, 2010–11

THE UNIVERSITY OF SYDNEY

GP profile

Australian General Practice Statistics and Classification Centre

a collaborating unit of the Australian Institute of Health and Welfare

Doctor Identification Number

Please fill in boxes or circle answers

1. Sex ..... **Male / Female** *(Please circle)*

2. Age .....

3. How many years have you spent in general practice? .....

4. Country of graduation *(primary medical degree)*:

☐ Australia ☐ Other: (*specify*) _____

5. How many direct patient care hours do you work per week?

(Include hours of direct patient care, instructions, counselling etc and other services such as referrals, prescriptions, phone calls etc.) .....

6. Do you conduct any of your consultations in a language other than English?

☐ No ☐ Yes 25–50%

☐ Yes <25% ☐ Yes >50%

7. Are you a GP registrar (i.e. in training)?..... **Yes / No**

8. Do you hold FRACGP? ..... **Yes / No**

9. Do you hold FACRRM? ..... **Yes / No**

10. Do you bulk bill patients?..... **All / Some / None**

11. At your major practice...

a) is a computer available?..... **Yes / No**

b) do YOU use the computer?..... **Yes / No**

*If '**yes**' to b) please tick to indicate which functions of the computer/clinical software you use?*

☐ Prescribing
☐ Internet
☐ Email

Active medical records:
☐ Completely paperless
☐ Combination of computer and paper
☐ Paper only

Pathology:
☐ Electronic ordering (online)
☐ Print/produce orders
☐ Receive results electronically

Imaging:
☐ Electronic ordering (online)
☐ Print/produce orders
☐ Receive results electronically

Which clinical software is used? *(please specify)* _____

12. Did any of your BEACH consultations take place in an Aboriginal Community Controlled Health Service?

No.....1
Yes - all 2
Yes - some (which dates) _____3

13. Over the past four weeks have you provided any patient care...

(a) in a residential aged care facility? ..... **Yes / No**
(b) as a salaried/sessional hospital medical officer? ..... **Yes / No**

14. Postcode of major practice address.....

15. In which GP Division is your major practice?

_____

16. For your major practice, please specify the number of...

(a) individual GPs (including yourself)? .....

(b) full time equivalent GPs (including yourself)?.....
(Full time equivalent ≈ 35-45hrs/wk)

(c) individual practice nurses? *(none = 0)*.....

(d) full time equivalent practice nurses? .....
(Full time equivalent ≈ 35-45hrs/wk)

17. Is your major practice accredited?..... **Yes / No**

18. Are any of the following health services located or available at your major practice?

(includes services in the same building or within 50 metres, available on a daily or regular basis) *(Circle all that apply)*

Physiotherapist.....1
Psychologist.....2
Pathology lab/collection centre.....3
Imaging.....4
Specialist.....5
Other (*specify*) _____6
None.....7

19. What are the normal after-hours arrangements for your major practice? *(Circle all that apply)*:

Practice does its own.....1
Co-operative with other practices.....2
Deputising service.....3
Other.....4
None.....5

20. Is your major practice a teaching practice? *(Circle all that apply)*:

For undergraduates.....1
For junior doctors.....2
For GP registrars.....3
No.....4

Thank you for participating in the ***BEACH PROGRAM.***
Please return this form with the completed BEACH pad.

AGPSCC, Westmead Hospital, WESTMEAD, 2145.
Ph: 02 98458151 fax: 02 98458155 email: jan.charles@sydney.edu.au Web http://www.fmrc.org.au

GP13 (V1)

Appendix 3: Patient information card, 2010–11

THE UNIVERSITY OF SYDNEY

Australian General Practice Statistics and Classification Centre
Family Medicine Research Centre

a collaborating unit of the
Australian Institute of Health and Welfare

INFORMATION FOR PATIENTS

The BEACH ® Project

Today your doctor is taking part in a National Survey of general practice called BEACH © *(Bettering the Evaluation and Care of Health)*. This study is being done by the Australian General Practice Statistics and Classification Centre, University of Sydney, with the Australian Institute of Health and Welfare.

Your Doctor will be recording information about each patient he/she sees (age, gender etc), the problems that you see the Doctor about and the treatments given to you. **There are no names on the forms so you cannot be identified.** The information about today's visit to the doctor will be one record in a set of 100,000 records collected in general practices across Australia over the year.

This information will be used by researchers to describe what happens in general practice and to look at different aspects of health care; by government departments to help them plan for our future health; and by pharmaceutical companies to gain a picture of the people who use their drugs and of the problems being treated with the drugs they produce.

Remember: your name will not be on the form and no information will ever be released which could possibly let anyone know who you are. However, if you do not wish your doctor to record any unidentified information about you or your visit **please tell your Doctor as soon as you go in**. Such a decision will not affect the care your doctor is providing in any way.

SEE OVER FOR PROJECT DETAILS

(page 1 / 2)

AGPSCC, Acacia House, Westmead Hospital, PO Box 533,WENTWORTHVILLE, 2145.
Ph: 02 98458151 fax: 02 98458155 email: jan.charles@sydney.edu.au Web http://www.fmrc.org.au

BEACH © Program Details

This program has been approved by the Ethics Committees of the University of Sydney and the Australian Institute of Health and Welfare (AIHW). The data are being collected under the AIHW ACT 1987 and in accordance with the Privacy Act 1988 (Amended 2001).

Organisations contributing financially to the conduct of this study in 2010–2011 are:

- ✦ The Australian Institute of Health and Welfare
- ✦ The Australian Government Department of Health and Ageing
- ✦ AstraZeneca Pty Ltd (Australia)
- ✦ Janssen-Cilag Pty Ltd
- ✦ Sanofi-Aventis Australia Pty Ltd
- ✦ Pfizer Australia Pty Ltd
- ✦ GlaxoSmithKline Australia Pty Ltd
- ✦ CSL Biotherapies Pty Ltd
- ✦ Merck Sharp & Dohme (Australia) Pty Ltd
- ✦ Novartis Pharmaceuticals Australia Pty Ltd

BEACH is endorsed by the Royal Australian College of General Practitioners

BEACH is endorsed by the Australian Medical Association

AMA

FURTHER INFORMATION:

Australian General Practice
Statistics and Classification Centre
The University of Sydney
Acacia House, Westmead Hospital
Westmead 2145

Phone: (02) 9845 8151
Fax: (02) 9845 8155
Email: jan.charles@sydney.edu.au
Web: http://www.fmrc.org.au

Any person with concerns or complaints about the conduct of a research study can contact The Manager, Human Ethics Administration, University of Sydney on +61 2 8627 8176 (Telephone); +61 2 8627 8177 (Facsimile); ro.humanethics@sydney.edu.au (Email).

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Appendix 4: Code groups from ICPC-2 and ICPC-2 PLUS

Available at: <purl.library.usyd.edu.au/sup/9781920899868>, see 'Electronic editions and downloads'.

Table A4.1: Code groups from ICPC-2 and ICPC-2 PLUS – reasons for encounter and problems managed

Table A4.2: Code groups from ICPC-2 and ICPC-2 PLUS – chronic problems

Table A4.3: Code groups from ICPC-2 and ICPC-2 PLUS – problems managed by practice nurses

Table A4.4: Code groups from ICPC-2 and ICPC-2 PLUS – clinical treatments

Table A4.5: Code groups from ICPC-2 and ICPC-2 PLUS – procedures

Table A4.6: Code groups from ICPC-2 and ICPC-2 PLUS – clinical measurements

Table A4.7: Code groups from ICPC-2 and ICPC-2 PLUS – referrals

Table A4.8: Code groups from ICPC-2 and ICPC-2 PLUS – pathology test orders (MBS groups)

Table A4.9: Code groups from ICPC-2 and ICPC-2 PLUS – imaging test orders (MBS groups)

The book provides a summary of results from the 13th year of the BEACH program, a continuing national study of general practice activity in Australia.

From April 2010 to March 2011, 958 general practitioners recorded details about 95,800 GP-patient encounters, at which patients presented 149,005 reasons for encounter and 146,141 problems were managed. For an 'average' 100 problems managed, GPs recorded: 69 medications (including 56 prescribed, seven supplied to the patient and six advised for over-the-counter purchase); 11 procedures; 23 clinical treatments (advice and counselling); six referrals to specialists and three to allied health services; orders for 30 pathology tests and six imaging tests.

A subsample study of more than 31,000 patients suggests prevalence of measured risk factors in the attending adult (18 years and over) patient population were: obese—27%; overweight—35%; daily smoking—15%; at-risk alcohol consumption—25%. One in five people in the attending population had at least two of these risk factors.

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